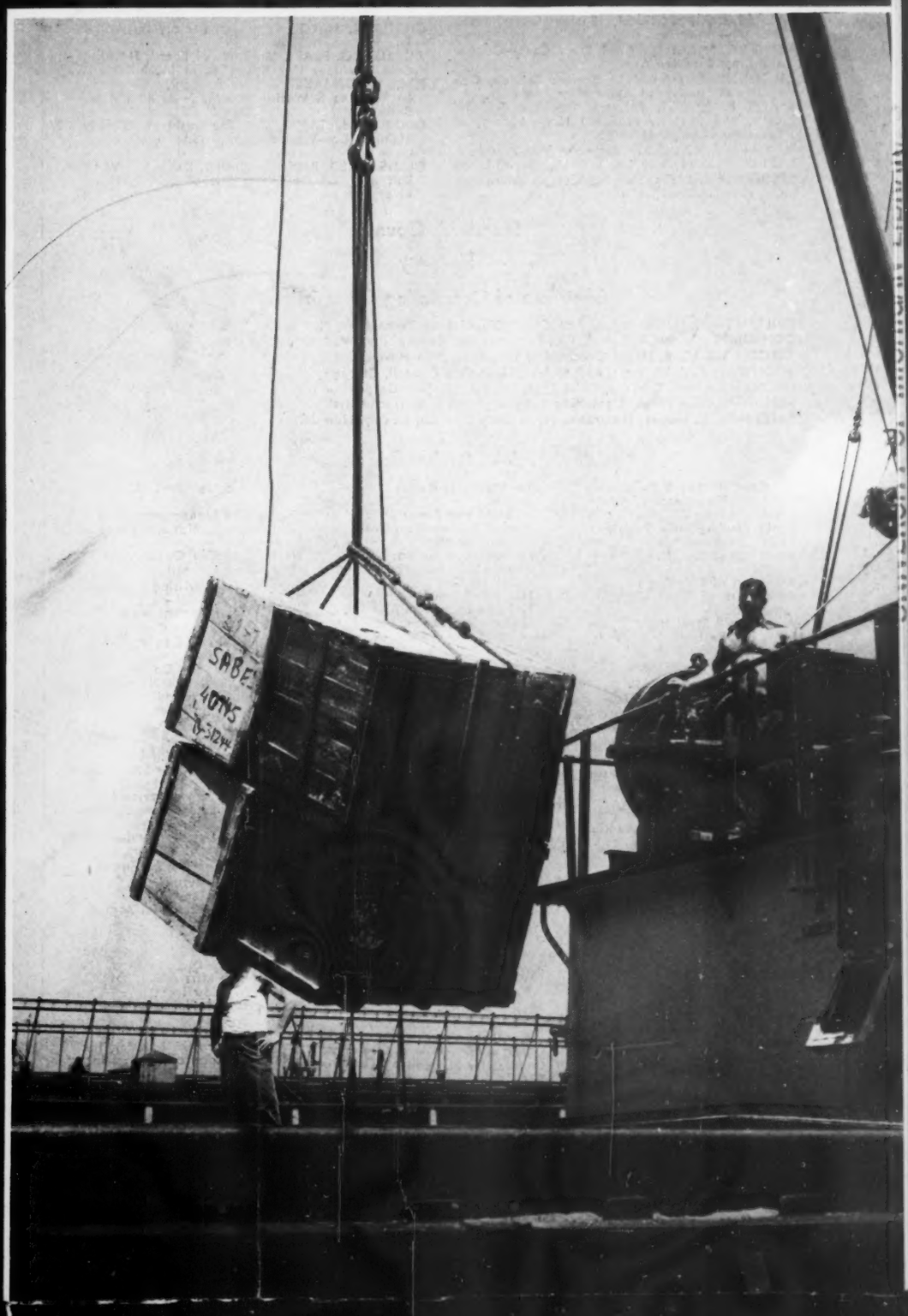
Industrial

Standardization



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To Our Readers

YOUR response to our request for comments and for up-to-date information for our mailing lists has surprised and pleased us. As we go into a new phase of our publishing career, we are making every effort to find better ways of meeting your needs—more effective ways of finding out what is happening in the many different fields where standards are being developed and put into use, and more interesting ways of presenting it to you. The accelerated pace which has marked the development of standardization during and since the war, both in this country and abroad, offers a new challenge in this regard.

From a preliminary analysis of your comments, your most urgent demand seems to be for more articles about how standards are used and how company standards work is organized. You want to know what problems others encounter in the application of standards and how they go about solving those problems. You want to know more about the men who are doing important work on standards; and about the thinking that has gone into making the final standardization agreements what they are. You also want to know more about the philosophy of standardization. We hope we may be able to give you this.

The success with which we meet your needs depends to some considerable extent on you. INDUSTRIAL STANDARDIZATION is the publication of the Members of the American Standards Association. It is not the publication of the ASA staff, or of the ASA Board of Directors, or the ASA Standards Council. Its entire reason for being is to give you as Members of the ASA the information you need about what is happening in standardization in the United States and in the world. To do this, we need your cooperation and help in sharing your experiences with others.

Your participation in the development of the magazine during the coming year will be welcomed. Please send us your comments.

Secretary

Company Members

More than 2100 companies hold membership either directly or by group arrangement through their respective trade associations

Our business is built on STANDARDS

FROM the early days of the telephone we at Western Electric have made the widest possible use of industrial standards. As manufacturing and supply unit of the Bell Telephone System our operations are so widespread, so complex, it is essential that we adopt standardized procedures by the thousands.

AS DISTRIBUTOR of Bell System equipment and supplies—stocking more than 31,000 items in central locations, and with 29 distributing houses carrying an average of 6,000 of these items an their shelves—we again make utmost use of standards for packing, distributing and stock control.

AS MANUFACTURER, we do a complicated job that could not be done as efficiently and economically without reliance upon highly developed drafting room standards, standardized manufacturing layouts, processes, tools, quality control and testing practices.

AS INSTALLER of complex telephone central office equipment—with about 23,000 installers working at 1300 job locations—standardized tools and methods are absolutely essential.

AS PURCHASER — buying some 30,000 different products for resale to Bell Telephone companies and dealing with a total of 27,000 suppliers—we likewise practice standardization to an unusual degree in methods of buying, inspecting and testing products.

IN ALL FOUR phases of our job, safety standards have been developed with utmost care to protect our nearly 110,000 men and women.

Yes, industrial standardization is mighty important to us at Western Electric and to the entire Bell System—for it is the very foundation that supports the most dependable, most valuable, and most economical telephone service on earth.

Western Electric

A UNIT OF THE BELL SYSTEM SINCE 1882

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Standardization is dynamic, not static. It means not to stand still, but to move forward together.

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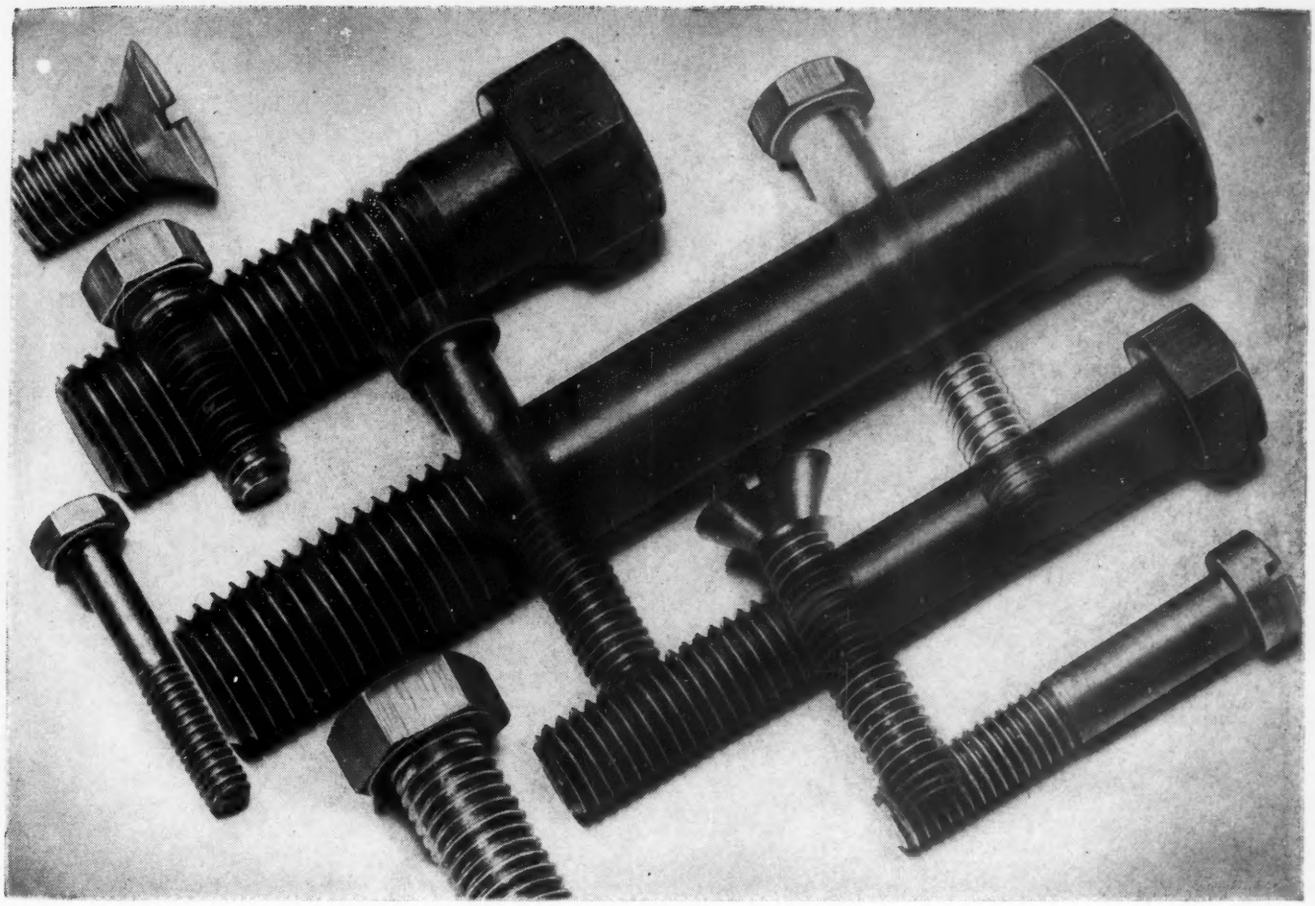
L. F. Adams

L. F. Adams, chairman of the Standards Council, died suddenly October 14. Although he had long been ill, he had been recovering gradually and had been able to resume many of his activities. He had become chairman of the Council in August (following the resignation of Dr E. C. Crittenden) after serving for nearly three years as vice-chairman, and had been nominated for election for 1949 expecting that he could safely undertake the work.

Mr Adams was widely known in the electrical industry. He had been with the General Electric Company continuously since 1909, serving successively as designer; application engineer; commercial engineer; assistant to the vice-president and member of the Standards Department; manager of the Standards Division, Executive Department; and Standards Consultant, Executive Department. For many years he was a member, and also served as chairman of the Codes and Standards Committee of the National Electrical Manufacturers Association. In 1930 he received the James H. McGraw Award to Electrical Manufacturers for his ". . . outstanding leadership in the coordination and advancement of the standardization and simplification of electrical products."

A leader in the national and international standards program for many years, Mr Adams had been NEMA's representative on the ASA Standards Council since 1927. He was also a member of the Safety Code Correlating Committee (of which he was chairman for three years), the Mechanical Standards Committee, the Consumer Goods Committee, and the Electrical Standards Committee. At the time of his death he was president of the U. S. National Committee of the IEC.

Mr Adams was a member of the American Society for Testing Materials, the National Fire Protection Association, the National Association of Electrical Inspectors, the International Municipal Signal Association, and the American Institute of Electrical Engineers.



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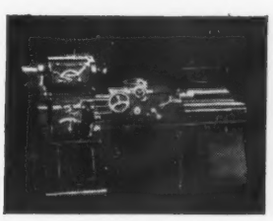

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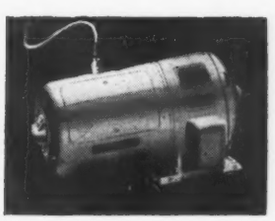

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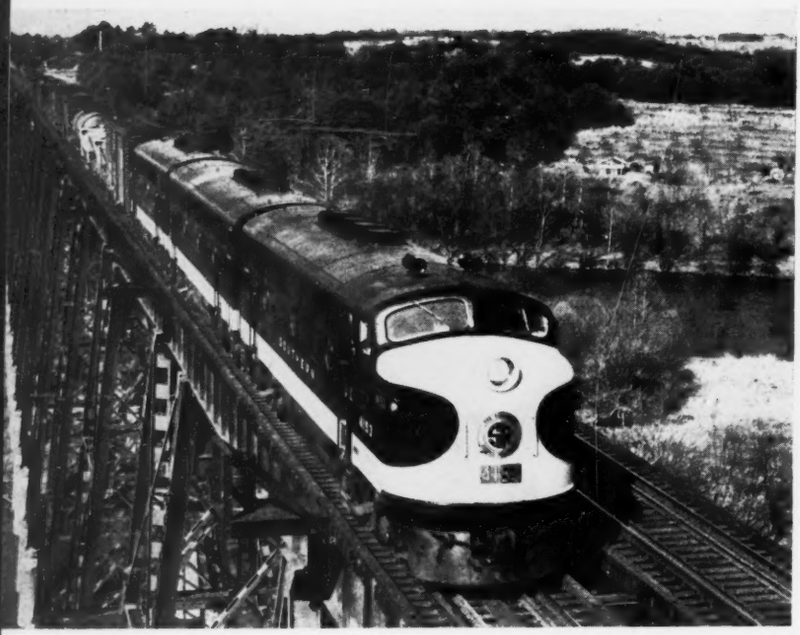
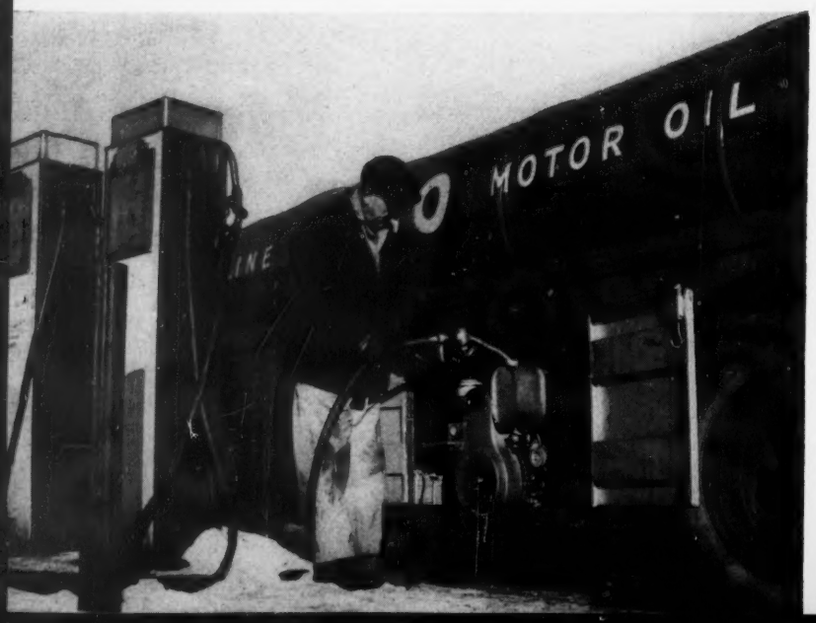




Three important users of petroleum products and an early stage in the birth of an oil well

Standard Oil Company (N.J.)

Above: This view from the "monkey board" shows the drilling of an oil well. Stacked "thribles" ready to be screwed into the string of pipe to "go into the hole" are at the right. A "thrible" is made up of three sections of pipe, each section approximately 30 feet long.

Left (top): Fueling a plane by means of a valve box located on the airport apron but connected to remote storage tanks by underground piping. The plane is refueled with the help of a light truck.

(Center): A Diesel engine pulls a fast southbound freight across the James River near Lynchburg, Va.

(Below): A small gasoline engine pump being refueled.

Petroleum Industry Finds Key to Better Customer Relations

By H. P. Ferguson

Work of Committee on Tests and Specifications Provides Common Language; Helps Petroleum Producers and Users

WHAT or where would the petroleum industry be today without standard test methods? If you consider what our world would be without spoken or written words to permit interchange of ideas, you can best picture what our industry would be without standard methods of tests. The old Roman expression, "Caveat Emptor" (Let the Buyer Beware), would in that case certainly be a better slogan than "Petroleum Promotes Progress."

Just as man made great strides when he learned to communicate with his fellow-man, so our industry has made progress because we have developed a technical vocabulary. The extensive work on standardization and specifications carried out by committee D-2 has contributed greatly to the development of our common language.

What are the petroleum industry's testing problems? First, we make literally hundreds of products. Second, the hundreds of hydrocarbons, which constitute our products, are not yet all identified. Third, our customers are less anxious to know the chemical nature of our products than they are to know how they perform.

We have, therefore, developed tests which serve for identification; tests which are fundamentally scientific; and we are working toward more tests which correlate with performance. Everyone who has anything to do with petroleum is familiar with such tests as distillation, flash, fire, Saybolt viscosity, carbon residue, and—my favorite personal headache—neutralization number. Since they are empirical, they must be rigidly standardized so that buyer and seller speak the same language. Today we take those tests for granted. However, they represent many hours of serious committee debate.

From an address presented before the National Petroleum Association at a meeting early this year.

***H. P. Ferguson,** the Standard Oil Company (Ohio), is chairman of Subcommittee XIII on Neutralization Number and Saponification of ASTM Committee D-2 on Petroleum Products and Lubricants.*

Two reasons stand out for the general and unquestioning acceptance of the ASTM methods of test prepared by Committee D-2. First, the many competing oil companies forget their selfish interests and try to develop the best tests. Second, and more important, the industry combines with its customers. This is as good for the industry as it is for the customers. Is it any wonder we have grown?

Of outstanding interest among the newer tests is the work of Subcommittee XXV on the Analysis of Petroleum Products for Hydrocarbon Types. Although only a few years old, this work definitely contributes to a better understanding of petroleum products. Methods have been published for the Determination of Olefins and Aromatics in Distillates; for the Determination of Aromatics in the Presence of Naphthenes and Paraffins; for the Purity of Hydrocarbons by Measurement of Freezing Points; and for Density. This subcommittee has an extremely active program involving refractive indexes, and spectroscopic methods of analyses.

Committee D-2 is sponsoring this extensive research program because present knowledge indicates that many important characteristics of gasoline, jet, and diesel fuels are related to their chemical structure. Better progress will result only when we have the analytical tools to study these products.

Much work is being done on petroleum lubricants, a subject close to the hearts of the members of the National Petroleum Association. The standardization of kinematic viscosity determinations is a boon to the laboratories; although the sales departments may not appreciate this so much as the refinery people.

The Subcommittee on Neutralization Number and Saponification (of which I happen to be chairman) has done excellent work in the last few years. We have published, as ASTM tests, electrometric methods for both acid and base determinations, and for saponification value. As laboratories have acquired the necessary equipment and developed the technical skill, a greater acceptance of these methods has been noted.

This year a new color-indicator method for acid and base numbers is being adopted. This method employs a single-phase system at room temperature and a new indicator. Compared to the old standard methods, ASTM D-188 or D-663, the repeatability and reproducibility of the new method will certainly make everyone happier.

The increasing use of heavy-duty oils has produced new chemical methods, some of which are: the Determination of Chlorine and Phosphorous in Lubricants, Sulfur Determination in the Presence of Additives, and the Determination of Lead, Iron, and Copper in New and Used Oils. These additives have made us conscious of foaming, which you undoubtedly have encountered in gear and crankcase oils. Gone forever are the "good old days," when lubricating oil was a mixture of neutral and

bright stock. As oil men, we admit that we are giving our customers much more for their money; we must also admit that it has not hurt us. The old Chinese proverb of Confucius says—"He who wishes to secure the good of others has already secured his own."

We have had problems in analyzing used crankcase oils for many years. Customers regularly request the oil companies to test used oils. Several companies give extensive analytical service to large fleet accounts. It is true, however, that the usual dilution, neutralization number, naphtha insolubles, and viscosity tests are not exactly scientific tools upon which to base our conclusions. A subcommittee of Committee D-2 has definitely contributed to our knowledge in this field. A method for the examination of extrinsic and intrinsic contaminants in used crankcase oil has been standardized. This subcommittee has also published a research method for determining the lubricating oil content of used oils. Proper interpretation of these results should soon enable our industry to serve its customers better. These methods also provide more exact means for studying oils and oil additives in the laboratory engines and oxidation tests.

At present, one of the subcommittees is developing a vacuum distillation test. Probably every oil company has developed its own method for laboratory distillation of heavier overhead fractions. Since the results are not comparable, we have a striking example of the value of Committee D-2's work. Until a standard method is developed and published, the industry will not have a common language for expressing the volatility of heavy fractions.

A method has been published for the Analysis of Petroleum Sulfonates. The difficult analytical job posed by this product makes the test all the more worth while.

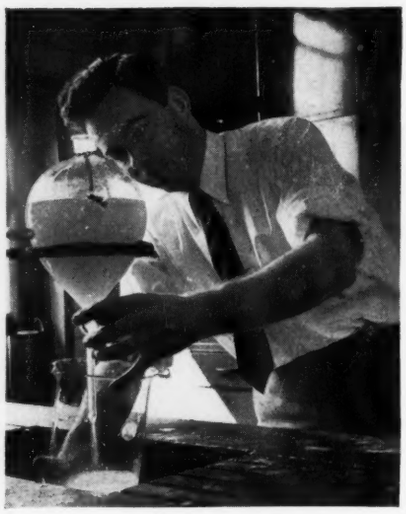
Better Method of Sampling and Gauging Expected Soon

In the last year or two a greatly enlarged committee on Sampling and Gauging has been organized. Proper methods for both are necessary to avoid buyer and seller discussions, which cause friction and embarrassment. Although it is not an easy problem, I believe better methods will be available within a few years.

One other expanded activity of Committee D-2 is well worth mentioning. By agreement with the Coordinating Research Council, ASTM has absorbed all of the standardizing activities on laboratory knock motors. A new Division of Combustion Characteristics has been formed and a new knock testing manual is now available. All knock motor tests for motor and aviation gasolines and for diesel fuels are included in one volume, plus an excellent section on the operation and maintenance problems of laboratory engines.

Research Divisions Handle Product or Technical Work

So far, this has been a discussion of the standardization activities of Committee D-2. The product or technical activities are under Research Divisions. Their functions include the promotion of knowledge of an assigned property of petroleum or its products, and the development of methods for the measurement of the property.



Standard Oil Company (N. J.)

Research chemist at Standard Oil Development Grease Laboratory blending inhibitors for turbine oil

The functions of a product division of a technical committee cover only the products included in its scope. These functions include: Promotion of knowledge, development and adoption of test methods for such products, correlation with service performance of the test data developed by such test methods, and preparation of material specifications.

In the past few years the number of product divisions has increased. The most recent additions are on lubricating greases, light hydrocarbons, tractor fuels, aviation fuels, and cutting oils. It is impossible in so short a presentation to cover all of these newer product division activities, as well as the older ones on gasolines, distillate fuels, and so on, but a few highlights may be of interest.

Technical Committee A on Gasoline has continual problems, as would be expected. The sections on Gum and Tetraethyllead are active in improving the accuracy and reproducibility of these test methods. The sections on Specifications and Significance of Tests have prepared this year a statement on the significance of ASTM specifications for motor gasoline.

Technical Committee B on Lubricating Oils was reorganized a few years ago and is actively studying many problems. Specifically, the division is studying: (1) The measurement of E. P. lubricant characteristics and their relationship with service, (2) the significance of the various properties of gear oils, and (3) the requirements for air compressor oils.

A very active committee is the one on Turbine Oils. This committee has demonstrated how well producer and consumer can work together to advance knowledge in a highly technical field. Tests have been published for the Oxidation Characteristics of Inhibited Steam Turbine Oils and the Rust-Preventing Characteristics in the Presence of Water. They have also published a Recommended Practice for the Preparation of New Turbine Lubricating Systems, which is well worth reading. It recognizes that the lubrication of equipment is the three-fold responsibility of the builder, operator, and oil supplier.

Committee E on Burner Fuel Oils has faced an unenviable job the past few years. New specifications for burner fuels have been written and will be published this year. The oil industry representatives are aware of the terrific demand for fuel oil. The burner manufacturers, while sympathetic to the problem, have been conscious of the millions of burners already installed. That a satisfactory agreement was reached, speaks well for the diplomatic accomplishments of our technical men.

Committee F on Diesel Fuels parallels Committee E. The supply and demand picture makes difficult the problem of arriving at mutually satisfactory specifications. This has been done, however, and new diesel fuel specifications D976-48T are now available.

Excellent work is being done by Committee G on Lubricating Grease to achieve better chemical analyses for lubricating greases. Improved

methods have resulted by separating the cone penetration test for greases and petrolatum into two test methods. Thorough study of the Norma-Hoffman oxidation test has resulted in a tentative method of test. An evaporation test has been published for cold weather greases containing light oils.

Technical Committee H is on Light Hydrocarbons. War activities stimulated growth in this phase of the industry and the postwar consumption is sufficient to justify further work. The aviation gasoline program—with its emphasis on alkylates, codimer, and cumene—and the synthetic rubber program—with its demands for butadiene—have introduced problems of testing and quality standardization.

Technical Committee L on Tractor Fuels has just been approved. Most of the subcommittee chairmen are appointed and work should shortly be under way. The first meeting was held in January, at which time five papers were presented as a Symposium on Tractor Fuels (see p. 164).

Committee J covers the field of aviation fuels. This committee has already reached agreement on specifications for 91, 100, and 115 octane aviation gasoline. Since it is certain that the demand for aviation fuels will grow larger, continuous problems will face this committee.

The final Technical Committee to be discussed is K on Cutting Oils. The quality of the machine tool work in this country is remarkable, but without our outstanding cutting fluids, this would not be possible. The problem of combining the proper machine, lubricant, and the metal being cut is not easy, however. The best combination is generally found by full-scale plant tests, which are obviously expensive to all parties. They are also not easy to control and duplicate. Technical Committee K is facing the problems in a most realistic manner and will undoubtedly make definite contributions to our industry. Eleven cooperating companies have already agreed to set up lathes for running accelerated plant control tests. As a manufacturing representative, I am hopeful that the work of the committee will lead to a substantial reduction in the number and kinds of cutting fluids needed.

One of the greatest problems facing the technical committees is the one mentioned when discussing the work on Burner and Diesel Fuels. Our industry does not have supplies to meet unlimited demands. As specifications for petroleum products become more restrictive, the problem of balancing supply and demand becomes more difficult. Committee work involves a common meeting between producers and consumers to give our customers the best value.

This paper has now covered the activities of both the research (or subcommittees) and the technical (or product) committees. Obviously, it could not cover all phases of the work. If it serves to show the tremendous amount of work going on, it has done half the job. If it has also helped to bring about a better understanding and appreciation of how the cooperative effort of the refiner and consumer makes the job of serving the American people easier and better then this presentation has been completely successful.

ASTM Committee D-2 And ASA Sectional Committee Z11

How These Two Committees Work Together on National Standards for Petroleum Products

Committee D-2 on Petroleum Products and Lubricants is now an organization of more than 600 individuals working on some 100 subcommittees. The compilation of ASTM standards issued as a result of its work this year runs to 780 pages and includes some 140 specifications and tests. (See "ASTM Publications on Petroleum," page 164.)

This ASTM committee works closely with the Sectional Committee on Petroleum Products and Lubricants, Z11, which was organized in 1934 as a general coordinating committee responsible for the orderly and systematic development of all standardization work on petroleum products. Its members are national associations of producers and users of petroleum as well as societies concerned with technical developments of petroleum and petroleum products.

Sectional Committee Z11 now has before it the question of whether or not American industry should take a leading part in the work of Committee 28 on Petroleum Products and Lubricants of the International Organization for Standardization. Before the war an international project had been under way with the American Standards Association serving as secretariat and as the representative of American industry.

When standards prepared by Committee D-2 have gained the necessary support and are considered to be sufficiently well seasoned, they are processed through Sectional Committee Z11, for possible submittal to the American Standards Association and approval as American Standards.

Of the nearly 50 American Standards concerned with petroleum products and lubricants originally developed by ASTM Committee D-2, revisions of five standards were accepted by Committee Z11 and approved by the American Standards Association this past year. These cover knock characteristics of motor fuels, analysis of grease, oil content of paraffin wax, cloud and pour points, and definitions of terms relating to petroleum. More recently, four new ASTM standards have been presented to Committee Z11 for consideration. These are:

Cone Penetration of Lubricating Grease (ASTM D 217-48)
Sulfated Residue, Lead, Iron and Copper in New and Used Lubricating Oils (ASTM D 810-48)
Chemical Analysis for Metals in Lubricating Oils (ASTM D 811-48)
Sediment in Fuel Oil by Extraction (ASTM D 473-48)

The American Standard Method of Test for Tetraethyllead in Gasoline (ASTM D 526-42; ASA Z11.48-1942) is being withdrawn for further study by ASTM Committee D-2.

Sectional Committee Z11 is sponsored by the American Society for Testing Materials under the procedure of the American Standards Association.

ASTM Publications on Petroleum

Compilation of test methods, definitions, and specifications will be available in November; Manual on rating fuels helps in use of five methods for determining combustion characteristics; Symposium on problems connected with tractor fuels is available

THIS year's edition of the Compilation of Standards on Petroleum Products and Lubricants containing the some 140 standard test methods, definitions, and specifications prepared by Committee D-2 and issued by the American Society for Testing Materials will be available about November 15. The 780-page book will be $5.50 in paper binding; $6.15 in cloth binding.

A more complete discussion of this important publication will be published when the book is available.

In addition, the ASTM issued early this year an important new publication which contains the five standard methods for rating motor, aviation, and Diesel engine fuels, and supplementary information concerning operation and maintenance details, building and utility requirements, installation and assembly of the engine, and reference fuels. This material has grown to such an extent recently that it has been found advisable to issue it in a separate manual, prepared and edited by the Editorial Section of the newly formed Research Division on Combustion Characteristics of ASTM Committee D-2 on Petroleum Products and Lubricants.

The combustion characteristics of fuels are an important factor, together with engine design and operating conditions, in determining the efficiency and output of an engine. As demands for bigger and better engines developed, thousands of miles of road tests were made and much research carried out in an attempt to determine the efficiency of fuels. Early in the 1930's, engines for laboratory testing were developed. In 1933 the ASTM issued its first test for knock characteristics, the so-called "Motor method." Subsequently, other methods for different fuels and purposes were developed.

Dr. Arman E. Becker, now with the Standard Oil Development Company of New York, and chairman of the Editorial Section, Division of Combustion Characteristics, of ASTM Committee D-2, has been one of the leaders in all of this work. He was responsible for the preparation of one of the first manuals in this field in the early 1930's, and later worked with the CFR Committee in issuing its manuals which are now superseded by this new ASTM book.

List price of the *ASTM Manual of Engine Test Methods for Rating Fuels* is $8.00. It is a volume of some 336 pages and has 110 figures, including photographs, charts, and diagrams.

An interesting compliation of papers on tractor fuels, presented early this year at a forum which constituted the first meeting of Technical Committee L on Tractor Fuels of ASTM Committee D-2, is also available. The papers include Tractor Statistics as Related to the Farmer; the Farmers' Interest in Tractor Fuels; a Review of Tractor Requirements as Related to Fuels; the Complexity of Tractor Fuels and Taxation; and the Effects of State Regulation and State Specifications on Tractor Fuels from the Petroleum Industry Standpoint. The 43-page book, in heavy paper cover, sells for $1.00.

Specifications for Arc-Welding Electrodes

INDUSTRIAL users of arc welding should be interested in four specifications for arc-welding electrodes recently completed by the Committee on Filler Metal, jointly sponsored by the American Welding Society and the ASTM.

The Tentative Specifications for Mild Steel Arc-Welding Electrodes and Tentative Specifications for Low-Alloy Steel Arc-Welding Electrodes represent a division of the old Tentative Specifications for Iron and Steel Arc-Welding Electrodes. The mild steel specifications include all classifications in the E60 series generally intended for welding mild steel. The low-alloy specifications include all classifications in the E70, E80, E90, and E100 classifications intended for welding low-alloy steel and generally containing suitable alloying elements to match the analysis and properties of these low-alloy steels. Classifications have been added in both specifications to cover the so-called "low-hydrogen" electrodes.

Each specification contains a Guide to the Classification of Electrodes as an appendix. This guide was first introduced in the 1945 edition and is intended to supplement the specifications and provide the user with information which will further assist him in determining the classification which will best suit his needs.

The Tentative Specifications for Corrosion-Resisting Chromium and Chromium-Nickel Steel Welding Electrodes, first issued in 1946, have been expanded so that 40 classifications, covering over 85 percent of the stainless electrodes used, are included. There are ten series of four classifications each which parallel the base metals of similar AISI number. The requirements have been rearranged as described above, and a Guide to the Classification of Electrodes is included.

The Tentative Specifications for Copper and Copper-Alloy Metal-Arc Welding Electrodes is the first in a series of specifications to be issued for copper and copper-alloy filler metal. Following the standard pattern of requirements and arrangement, it includes classifications for copper, phosphor-bronze, copper-nickel, copper-silicon, and aluminum-bronze materials. Arc welding of these copper alloys has increased considerably and these new specifications are expected to meet the need for suitable classification of the filler metal used. The Guide for these specifications should be helpful.

Individual copies of all of the above specifications are available from either the American Welding Society, 33 West 39th St, New York 18, N. Y., or The American Society for Testing Materials, 1916 Race Street, Philadelphia 3, Pa., at 25 cents each.

The Role of Technical Standards
In International Trade

By Edmund A. Pratt

Consulting Engineer and Representative of the International Organization for Standardization in its relations with the Economic and Social Council of the United Nations.

Will the screw thread on the machinery you sell European companies under ERP be made according to American standard measurements, British (Whitworth), or metric specifications?

One step toward answering this question is now near completion. This is agreement on the part of American, British, and Canadian industries on a unified "ABC" screw thread (see also page 168).

IT has been emphasized that the main objective of the European Recovery Program is the permanent recovery of European agriculture and industry so that by the end of the program the sixteen countries, and perhaps all of Europe, will be self-supporting, each able to produce the goods for which it is most efficiently organized and able to trade with all the world without artificial support or undue restrictions. It is important to note that *recovery* is the object, not the imposition of new ideas, new processes or other innovations, except in so far as these may fit conveniently into the European scheme of things or are necessitated by the nature of the Program. The adoption of American processes or methods, or American industrial standards is not a primary consideration or to be anticipated on any large scale. Many of the countries affected were well-organized industrially before the war, and it is the resumption of production and exchange that is all important, not the recasting of European products or methods in the American mold.

European Recovery

At least five important organizations are at present concerning themselves with the problem of European recovery.

First—and of greatest importance to Americans—is the Economic Cooperation Administration (ECA) functioning under the Economic Cooperation Act of 1948. The duty of this Administration is the implementation of the European Recovery Program (ERP) with funds to be supplied by the United States Government, either as outright grants or as loans.

Second, on the European side is the Organization for European Economic Cooperation (OEEC) composed of the 16 countries that joined in the recovery program plus western Germany. Not only has this group cooperated in the general planning of European recovery under ERP, but some of its subgroups have already put forward proposals for specific international projects, including the standardization of machinery.

Third, the five countries comprising Great Britain, France, Belgium, the Netherlands, and Luxembourg have, according to press reports, brought to the attention of ECA and OEEC their program of cooperation in production and exchange. This program is particularly noteworthy because one of its aims is to *standardize* certain production methods. Such standardization will naturally be on the basis of European, not American, practices.

Fourth, a very important organization under the aegis of the United Nations is the Economic Commission for Europe (ECE). This is a Regional Commission of the Economic and Social Council, and one which has already done valuable work. It has recently released the results of a survey of European conditions containing interesting—sometimes surprising—information on present conditions in many European Countries. Some of its Working Parties are dealing with standardization in such important fields as transportation and building construction.

Fifth, and finally, the proposed International Trade Organization (ITO), to be established under the Havana Charter, and provisionally functioning through an Interim Commission with a Secretariat in Geneva, proposes to take up at its first regular session a report to be made by the Interim Commission on the whole field of industrial and general economic development and reconstruction.

It is obvious that these five groups are covering to a large extent the same general field of activity. Coordination of their work is essential and no doubt it will ultimately be brought about. The primary object of all is the promotion of production and exchange. Technical standardization is of concern to all of them; in fact, it is one of the most important tools that may be employed to speed the desired recovery. It is actually now being employed by at least two of the five organizations for this purpose.

Kinds of Standards

Standards that affect international trade are of a variety of types. Monetary standards and standards of weights and measures are known to everybody concerned with foreign trade. In fact, international trade

Reprinted from *International Markets*, June 1948, published by Dun & Bradstreet.

would be quite impossible without a considerable measure of standardization, and it would be both restricted and difficult without certain fundamental technical standards, such as those for English and metric equivalents, electric voltages and frequencies, or scientific terminology. The standards of particular interest and importance in connection with shipments of American manufactured goods under ERP are those affecting the production of the goods, and to some extent the purpose for which they are required, where they are to be used in conjunction with locally manufactured products or those obtained from other foreign countries.

Among the many standards of this kind are those affecting points of connection between the manufactured article and locally built structures or equipment, such as bolted fastenings or threaded pipe connections; others are electric voltages and frequencies, performance standards, and methods of testing. Limits, fits, and tolerances are also among the important mechanical standards, while such basic standards as those dealing with metric dimensions, reference temperatures, etc are all of importance.

Not a machine exists that does not use, somewhere in its makeup, screw threads for the interconnection of parts. And there are three different widely used standard systems of screw threads: the American, the British (Whitworth), and the metric. None of these is adapted to interchangeable use with either of the others. Therefore if a threaded part is made in the United States to be used in conjunction with a companion part of other origin it must be made to the same foreign standard specification to which the foreign part is made. In a simple instance like this it is easy for the American manufacturer to equip himself to meet the foreign requirement, but it is essential that he realize that it must be done.

Standardization in Europe

Between the first and second World Wars industrial standardization developed rapidly in the principal European countries as well as the United States. In fact, centralized national standardization had gone much farther in Germany, for instance, than in America before 1939. The impelling reasons behind this development were the same there as here: economy of materials; greater output; more efficient production; and, above all, interchangeability of parts. Since the second World War the standards programs of some important European countries have been greatly accelerated, and the fields covered are continually expanding.

Russell Burdsall & Ward

Screw thread standards have special importance when American threaded parts shipped under ERP must fit with parts made in other countries. Above — Semi-finishing large-size nuts up to 6½ inches across flats.

Standards May Be Used To Promote International Trade

Another powerful incentive to standardization is its utility as a promotional tool in international trade. Every industrially advanced country stands to profit by the adoption abroad of its industrial standards. Consequently some countries take great pains to promote the use of their standards in the less developed countries that constitute lucrative markets for their industrial goods.

Germany was noted for its effective promotional methods. The national standards body, the Deutscher Normenausschuss, up to 1940 had published four foreign language handbooks devoted to basic standards, production materials, and bolts, nuts, and accessories. Also, some 170 individual standards concerning various aspects of electrical, civil, and mechanical engineering had been published in foreign languages. Spanish and English editions of most of these handbooks and standards were issued; a substantial number were also in Portuguese and in French. Prominent in the list were such standards as those covering the acceptance and testing of electrical machinery (in all four languages), screw threads and tolerances, calculations for steel structures, and many others. The advantage accruing to German foreign trade from the adoption of these standards needs no emphasis; not only did it improve the competitive position of German exporters, but it also effectively promoted repeat orders.

Nor was Germany the only country that pursued this policy. Great Britain—with the oldest national standards organization of any of the industrial countries—has consistently promoted the use abroad of British standards. The British Standards Institution (BSI) maintains an office in Buenos Aires, under the guidance of a committee of British engineers and importers, which cooperates with the Argentine national standards organization in the preparation of Argentine standards in order to insure that, as far as practicable, they correspond with British standards and practice. In 1942 a book of some 1100 pages entitled La Práctica Industrial Británica (British Industrial Practice) was edited by the BSI and translated into Spanish by the British Standards Committee in the Argentine Republic. The advantage of such promotional work is expressed in these words by *Foreign Commerce Weekly:*

> "One of the most favorable factors arises from the acceptance or use by many countries of British standards. Since replacement or new equipment ordinarily must conform to these standards and

specifications, a regular flow of trade is virtually guaranteed." (Britain's Current Problems in Foreign Trade Reconstruction, *Foreign Commerce Weekly*, March 29, 1947).

Mention of France should not be omitted in connection with postwar standardizing activities. With some 3000 standards already issued, the French national standards organization is active in many fields. The Government maintains close control of the promulgation of standards in France and wherever it is judged to be in the national interest their use is made mandatory.

Many more instances could be mentioned where technical standardization is employed as a tool for trade promotion. For example, in a message from Warsaw, Joseph E. Evans, Staff correspondent of the *Wall Street Journal*, reports that

> "the two Soviet satellites (Poland and Czechoslovakia) recently adopted common standards in building, machine parts, electrical industry, smelting, gas pipe lines, technical terminology and workshop techniques. The Czechs took 50 Polish standards and the Poles took 14 Czech. Statistical methods are being mutually revised and standardized." (*Wall Street Journal*, May 18, 1948).

Not long ago *Foreign Commerce Weekly* called attention to the program of mutual economic collaboration of Bulgaria and Yugoslavia, and reported that "The two countries will standardize production of railroad cars, locomotives, refrigerator rolling stock, as well as agricultural machinery."

With these evidences of close cooperation in industrial standardization by the countries of Eastern Europe before them it behooves the ERP countries and the United States to consider this aspect of international coordination.

It can safely be assumed that the industrial European countries, practically all of which are included in the European Recovery Program, will, so far as possible, insist on the use of their own industrial standards in specifications for equipment and supplies furnished for their rehabilitation.

Moreover, it is important to note that, in line with Government regulation in other fields, the use of many national standards is made obligatory in some of the ERP countries. Even in democratic Britain all electrical plants of more than 10,000 kw capacity are to be standardized to two main types of generators—30,000 and 60,000 kw. And we are informed that "Further measures of compulsory standardization are contemplated for boilers, steam and water pipes, and vales." (*Foreign Commerce Weekly*, February 28, 1948).

The Exporter's Problem

The Economic Cooperation Administration has advised American manufacturers who do not already have satisfactory export connection to appoint representatives to deal with exports to the ERP countries. Such representatives are of course entirely satisfactory from the business standpoint, but the question of technical specifications still has to be provided for. The technical interpretation of the purchase specification remains the responsibility of the manufacturer. Few export representatives are equipped to render this service, nor would it be reasonable to expect them to be.

Some of the larger companies supplying equipment for the European Recovery Program will already have standards departments in their organizations. These can take foreign standards and put them in a form to be readily comprehensible to the production departments of their factories. Companies not so fortunately situated will have to seek outside help, but this can be obtained without too much difficulty.* Leaving aside the mere question of quantity, the small or medium size manufacturer can supply European or other foreign needs just as satisfactorily as the largest concern. He merely has to know just what the requirements are and to be on the lookout for any peculiarities in the specifications. If he understands the specifications he can equip himself to produce the goods as well as anybody.

It is no exaggeration to say that the European Recovery Program provides still another opening through which American firms can establish lasting and profitable foreign trade connections.

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* The American Standards Association has a file of standards published by the national standards associations of other countries which can be consulted by ASA Company Members.

Books Relating to Standardization

ASTM Standards on Coal and Coke (American Society for Testing Materials, 1916 Race Street, Philadelphia 3, Pa., $2.00)

Twenty-nine standard specifications and tests covering coal and coke have been published in this special compilation. The standards given are as of September 1948, and incorporate a number of changes made during the current year, along with certain new material.

Test methods and procedures pertaining to coal cover sampling, analysis for volatile matter in connection with smoke ordinances, grindability, drop shatter test, tumbler test, screen analysis, size, sieve analysis, cubic foot weight, index of dustiness, and free-swelling. Specifications cover classification of coals by rank and grade.

For coke there are standardized methods for sampling, and tests for volume of cell space, drop shatter, tumbler, sieve analysis, and cubic foot weight.

An appendix gives several proposed methods which Committee D-5 is studying involving tests for coal and coke.

Your Guide to Safety in the Plumbing, Heating and Ventilating Trades (Association of Casualty & Surety Companies, 60 John St., New York 7, N. Y.)

This is another booklet in a lengthy series of pocket-size safety guides, published by the Accident Prevention Department of the Association of Casualty and Surety Companies. Aside from general safety rules and tips on safe living off the job, the booklet tells plumbers and heating and ventilating workers how to handle safety tools and equipment, ladders, scaffolds, and walkways. Other sections are devoted to the storage and handling of materials and to avoiding hazards while working in tanks and trenches. Copies are available through member companies of the Association.

Handbook of Scientific and Technical Societies and Institutions of the United States and Canada. 5th Edition (National Research Council, National Academy of Sciences, Washington, D. C., $5.00)

The National Research Council of the United States and the National Research Council of Canada have coperated again in issuing this revised edition. The Handbook is a directory to those societies, associations, and similar organizations in the natural sciences and related fields that contribute to the advancement of knowledge through meetings, publications, and other resources.

The present edition contains data for 1302 organizations in the United States and for 166 in Canada. A number of organizations were discontinued during the war period and in some cases local or sectional societies combined with a national group. These facts should be noted in comparing the present number with the number in the fourth edition published in 1942.

American-British Unification of Screw Threads Near Completion

Drafts of new American and British standards now under consideration; American industry acts through Sectional Committee B1; conference between American, British, and Canadian delegates scheduled for November

AN international standardization program of major importance to the mechanical, electrical, automobile, aircraft, and machine tool industries, as well as numerous other industries using bolts, nuts, screws, and other threaded components in the manufacture of their products, bids fair to be successfully completed in the near future. This program is the unification of the American and British standard systems of screw threads.

The British system was originated by Whitworth in 1845, and is based on a thread angle of 55 degrees and a thread form having rounded crests and roots. The American system, originally developed by Sellers in 1864, has a thread angle of 60 degrees and a thread form with flat crests and roots. The pitches for a given diameter are generally the same in both systems, so that American and British bolts and nuts of the same nominal size usually can be assembled without difficulty. A troublesome exception is the half-inch coarse thread for which the Americans have adopted a pitch of 13 threads per inch, against 12 threads per inch in the British system. Furthermore, it obviously is impossible to establish accurate fits between components having threads with different angles.

As early as the first World War, it was found that unification of the two systems would be desirable. A major difficulty was that both systems had become adopted widely in the respective countries. Canada, with its close tie to the United Kingdom, but a close neighbor to the United States, has the difficulty of dealing with both systems, even in peacetime.

The first effort toward unification was made in 1919, when an American delegation of experts went to London. These discussions produced no result. A second effort made in 1926 by a British delegation visiting this country, was also unsuccessful. During the second World War, the screw thread problem came up again in very acute form. American industry was supplying the British with a large volume of war equipment, built to British specifications, and hence requiring the use of British Standard Whitworth threads.

Screw Thread Standard Adopted As a War Emergency Measure

This situation led to the adoption in the United States, as a temporary emergency measure, of the American War Standard for Screw Threads of Truncated Whitworth Form (American Truncated Whitworth Threads). These threads have a 55-degree angle and are interchangeable with British Standard Whitworth threads. However, they can be produced by means of threading tools having flat crests and roots when new, that is, tools of the type used for producing American Standard threads. This war emergency measure, although helpful to American industry, still left the two major inch thread systems in existence side by side, and focused the attention again on the need for their unification. This problem was taken under consideration again in 1943, when British and Canadian delegations met in New York with American experts. This conference was followed by discussions in London in 1944, when an American-Canadian mission went overseas. Again, in 1945, American and British experts went to Ottawa for a third conference, where basic agreement on a unification plan was reached. The British consented to change from the 55 to the 60-degree thread angle, and a basic profile, thereafter sometimes designated as the "ABC form" of thread (meaning American-British-Canadian) was adopted to serve as the starting point for unified standards to be developed in the three countries concerned. Accordingly, the Americans agreed to adopt a rounded root for the external thread (bolt). They also agreed to consider the adoption of the ½-inch coarse thread with 12 threads per inch. The agreement was such that the Americans could continue to use the same truncated profile they had adopted in American Standard B1.1-1935, while the British could adhere to the rounded crest and root characteristic of the Whitworth profile.

Since the Ottawa conference, the technical committees in the United States and the United Kingdom, in charge of screw thread standardization, have developed proposals for the revision of the existing national standards, along the lines agreed to at the Ottawa conference. The Canadians, interested mostly in having to deal with only one system instead of two, have signified that they would be willing to adopt any solution on which the United States and Great Britain could agree. The American, British, and Canadian committees have kept in continuous touch by correspondence, and through occasional delegations of experts. Also, the Committees of the ASA and the BSI have kept in close touch with the military services in their countries. Thus, in the United States, ASA Sectional Committee B1 on Standardization and Unification of Screw Threads has been cooperating with the Interdepartmental Screw Thread Committee representing the government services.

Following a series of meetings between a British delegation and American experts held in New York and Washington last July, the negotiations have now proceeded to the point where a semi-final draft of a Proposed American Standard for Unified Screw Threads (For Screws,

Bolts, Nuts, and Other Threaded Parts), as well as a draft Provisional British Standard for Unified Screw Threads are ready for consideration by the industries and government services in the respective countries, and subsequent approval by the national standards bodies.

How unification of practice and, hence, interchangeability of American and British screw threads has been achieved, will be clear from figures 1 and 2 representing the thread forms as illustrated in the American and British drafts, respectively.

American Draft Worked Out By ASA Sectional Committee

The American draft has been worked out by Sectional Committee B1 on Standardization and Unification of Screw Threads, organized in 1921 under ASA procedure and sponsored jointly by The American Society of Mechanical Engineers and the Society of Automotive Engineers. Chairman of the sectional committee is Elmer J. Bryant, (Greenfield Tap and Die Corp) and vice-chairman Frank P. Tisch (Pheoll Manufacturing Company). Secretary and assistant secretary are W. R. Penman and R. L. Riley (both of Bethlehem Steel Company). Chairman of Subcommittee No. 1 on Revision of the American Standard is Paul J. DesJardins (Pratt & Whitney Company), with W. H. Gourlie (Sheffield Corporation) as secretary.

The third effort toward American-British-Canadian unification was started in 1943 under the auspices of the Combined Production and Resources Board, which made the arrangements for the conferences in New York (1943), London (1944), and Ottawa (1945). After the abolition of the Board, a Sponsors' Council composed of the representatives of the American Society of Mechanical Engineers, the Society of Automotive Engineers, and the American Standards Association, was created under the chairmanship of William L. Batt to lend support to the work carried on through the facilities of the national standards bodies in the three countries concerned—the American Standards Association, the British Standards Institution, and the Canadian Standards Association.

Great credit should be given to the sponsors, officers, and members of the American committees and to their counterparts in the United Kingdom for the encouraging progress which has been made to date.

It is hoped that final agreement between the technical committees in the three countries may be reached at a conference to be held in this country during the month of November. This agreement will be a matter of major importance to the industrial groups in the three countries having an interest in screw thread standardization, as well as to the military services, with a view to the manufacture and servicing of war equipment.

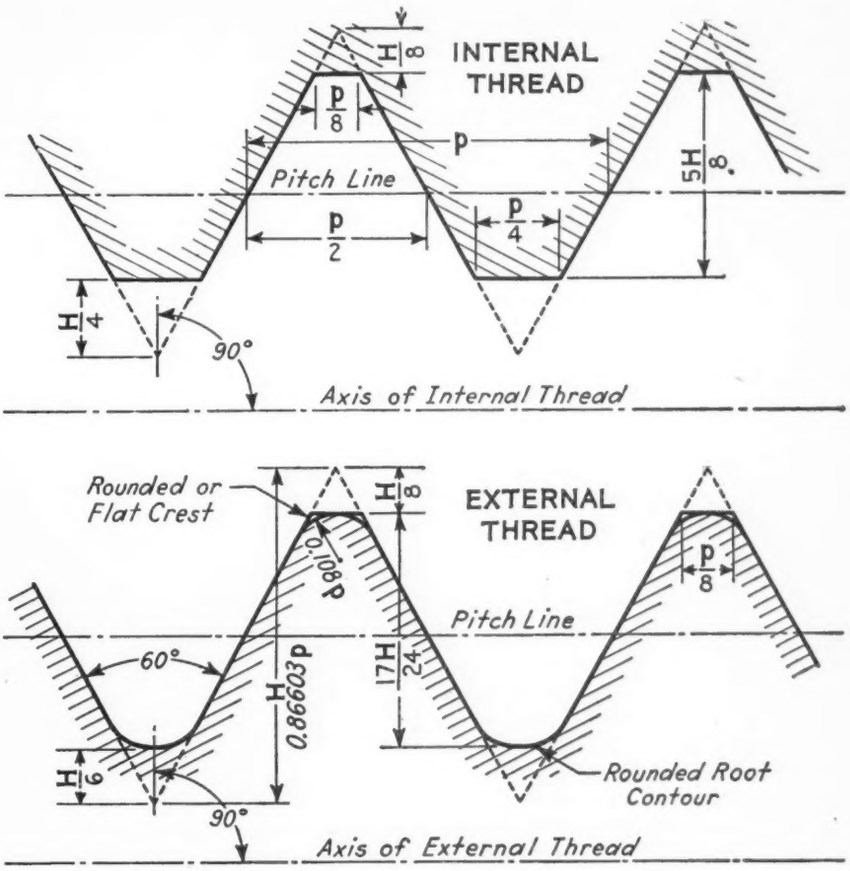
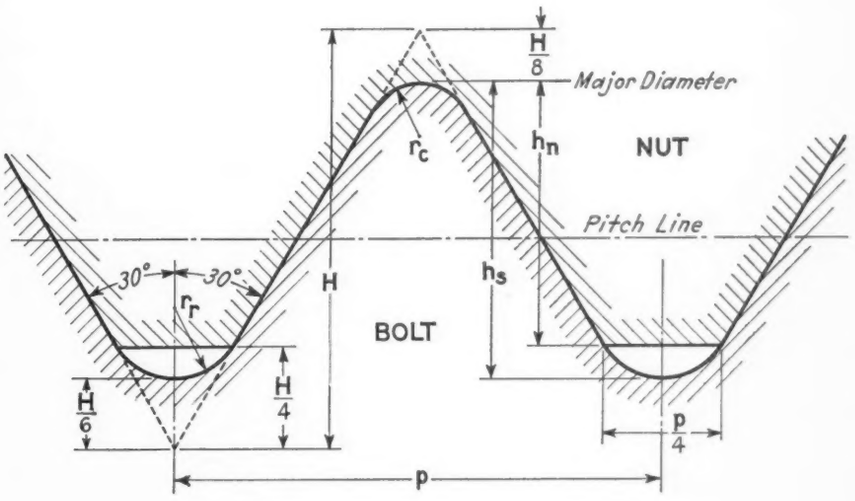


FIG. 1 INTERNAL AND EXTERNAL SCREW THREAD FORMS (MAXIMUM METAL CONDITION)

Fig. 1. The internal and external screw thread forms as proposed in the American plan for unification of the American and British threads.



$H = 0.866025p$ $\frac{H}{8} = 0.108253p$ $\frac{H}{6} = 0.144338p$ $\frac{H}{4} = 0.216506p$

$r_c = 0.108253p$ $r_r = 0.144338p$ $h_s = \frac{17H}{24} = 0.613434p$ $h_n = \frac{5H}{8} = 0.541266p$

Fig. 2. The basic form of screw thread proposed in the British draft.

Nuts and Bolts

What the New York Times had to say about standardized screw threads

Reprinted from an editorial in The New York Times, October 4, 1948

FROM Washington comes the news that American and British machine-makers will soon standardize screw threads, so that an American bolt will receive a British nut. The effect on industry and on military policy will be profound. Without standardization mass production is impossible, and without the mass production of some ten thousand items armies in the field would be crippled. With standardization goes interchangeability of machine elements and parts of products.

The first step in this direction was taken by Samuel Bentham on behalf of the British Admiralty. In his eighteenth-century day a single full-rigged ship needed about 1,500 pulley blocks, and the Admiralty was purchasing about 100,000 annually. Bentham introduced wood-working machines to perform specific functions in a series of operations, with the result that pulley-blocks were good for any ships of the Navy. Eli Whitney introduced the principle in the production of muskets. The whole American machine-tool industry came out of his brilliant success. Properly impressed manufacturers of household goods and industrial machinery began to standardize their equipment and their products, so that today we turn out annually millions of identical electric lamps, bathtubs, telephones, nails and fountain pens. But the impetus came from military tacticians and strategists.

In the past the standardization of industrial machinery and military equipment has been national. International standardization is a natural consequence of total war when it is waged by groups of Powers. In both the First and Second World Wars, British and American industry had to work together. Because screw threads were not standardized, to mention but one item, it was not always possible to interchange machine parts or make the same weapons on both sides of the ocean. Precious months were wasted here in supplying the British with both industrial and military equipment that met their specifications.

It is not likely that the proposed arrangement with Great Britain will stop at screw threads. Standardization can go much farther in industry than in the Army and Navy, partly because of the flexibility of industrial thought, partly because years must elapse before new weapons are developed, tested and adopted, and partly because it takes some years to abandon an obsolescent weapon which is in the hands of several million trained men. Nevertheless, the proposed arrangement indicates that engineering specifications will be more than ever internationalized and that an internationalized industry will be closely interwoven with armies that are themselves internationalized in the sense that their weapons will be more or less identical. This marks a forward step for industry, especially American industry. Exporters will find it easier to do business with foreign customers if machines and their products can be taken off the floor or the shelf and sent overseas. But international standards will not be introduced overnight, nor will the change to them be cheap. Even the internationalization of screw threads will take time, and the cost may well run into several hundred millions.

Four Grays Proposed For Industrial Equipment

Color chips make it possible to compare shades

Four shades of gray for use in painting industrial machinery and equipment are recommended in a proposed standard for Gray Finishes for Industrial Apparatus and Equipment now being circulated for comment and trial use. Although the standard does not recommend that gray necessarily be used, it does suggest that when industrial apparatus is painted gray the use of these standard shades will help in matching the shade desired and in providing better color harmony.

The four standard grays are described according to number and Munsell notation since it is expected that for industrial use the exact identification will be desired. For the convenience of individuals, however, color chips have been prepared so that anyone interested can visualize what the color described will look like on his machines. These color chips can also be used in making a quick visual check or comparison of the colors.

The four standard grays recommended are: Light gray; medium light gray (or standard machine tool gray 7-B); medium dark gray and dark gray.

The proposed standard not only identifies the standard grays by number and Munsell notation and provides for the use of color chips as secondary standards, but also recommends tolerances for both the secondary standards and the spectrophotometric work. In addition it makes recommendations as to gloss and texture.

An appendix describes the use of the Munsell notations and makes recommendations as to how to use the secondary standards.

The Proposed American Standard Gray Finishes for Industrial Apparatus and Equipment, Z55, was prepared by a committee of 16 national organizations, producers and users of industrial equipment and producers of industrial finishes, and four individual members widely recognized as authorities in the use of color. The committee is sponsored by the Mechanical Standards Committee under the procedure of the American Standards Association.

Copies of the Proposed American Standard on Gray Finishes for Industrial Apparatus and Equipment, Z55 can be obtained from the American Standards Association. Color chips illustrating the proposal are available at $1.00 per set.

Added Safety for Homemakers In the Use of Gas Appliances

By Edwin L. Hall

Seven revised sets of requirements adopted to simplify and coordinate testing standards for gas-burning appliances. Committee authorizes study of gases and pressures used in laboratory tests

SIMPLIFICATION and reorientation are the keynotes in the seven sets of completely revised requirements for gas-burning equipment which have been adopted by the Approval Requirements Committee of the American Gas Association and approved by the American Standards Association.

The new standards represent a year of intensive activity on the part of the individual subcommittees for the various types of equipment involved in cooperation with the American Gas Association's Laboratories. These revised texts cover American Standard requirements for the following types of appliances and accessories:

1. Domestic Gas Ranges
2. Gas Space Heaters
3. Portable Gas Baking and Roasting Ovens
4. Hot Plates and Laundry Stoves
5. Domestic Gas Conversion Burners
6. Installation of Domestic Gas Conversion Burners
7. Automatic Main Gas-Control Valves

The new requirements become effective January 1, 1949. However the Laboratories are in position to test and certify equipment under them immediately upon request of the manufacturer.

In simplifying and revising the requirements, three major objectives were pursued. First, the achievement of greater standardization both in requirements and test methods; second, the covering of advances in technological progress and field experience; and third, greater coordination and simplification of the various texts with the subject matter arranged in more logical order with related subjects grouped together.

Safety, as always, remains the essential criterion for appliance construction and performance. Wherever possible, performance requirements have been substituted for construction features in order to permit greater freedom of design and the use of new materials and fabricating methods. At the same time, new requirements have also been adopted to cover new developments in types of equipment, advances in automatic controls, and changes in installation methods.

Mr Hall, in addition to serving as secretary of the ASA Sectional Committee on Approval and Installation Requirements for Gas Burning Appliances, Z21, is also secretary of the American Gas Association's Approval Requirements Committee. The AGA serves as sponsor for project Z21.

Technological Progress Should Be Stimulated By Present Revisions

The present revisions are intended not only to benefit manufacturers, distributors, and consumers alike, through greater standardization, but to stimulate orderly and intelligent progress in the technological side of gas appliance development. This development has been rapid, due to war-born advances in design, fabrication methods, and use of new materials. It has been still further influenced by the large-scale resumption of appliance production and the rapidly growing popularity of gas as a fuel for domestic as well as industrial heating.

In meeting the challenge of a changing and expanding market, the new standards demonstrate the value of a well-established channel of operations within whose framework a decidedly creative process of standardization can be maintained without imposing undue restrictions upon equipment design. They tend to hold back only the introduction of features strictly in the "gadget" class which may not be safe or are not the result of at least logical and progressive engineering development. Thus, they bring to the consumer, appliances designed to sound engineering standards.

Requirements for domestic gas ranges were most affected by the simplification program. Features eliminated will result in approximately a 25-percent reduction in text, consequently simplifying test procedures. Cooky baking and preheating tests for ovens were deleted, since it has been found by experience that the cake baking test provides an adequate measure of oven performance.

Requirements for oven thermostats were clarified so that the optional use of either conventional or snap-acting controls will be permissible. Vertical projections on range tops for minimum vertical clearance are no longer required, since performance tests take care of provisions for venting of top burners.

New features added make provision for use of three systems of venting. These are a natural venting system; a mechanical forced draft system for use in connection with ventilation of the kitchen; and a combination of both systems which is under the control of the operator and yet insures satisfactory and safe perfomance.

American Gas Association

Performance requirements are emphasized in the new editions of American Standards for gas appliances. Here technicians are checking the surface temperature of a gas stove to determine the effectiveness of the insulation.

The text of the standards for the installation of conversion burners is completely new and brings these requirements up to date in keeping with recent developments in this field. Sixteen illustrations of major factors important to proper installation are included. Baffling of flues to obtain the correct neutral pressure point in a furnace is permitted by the new requirements.

All of the standards adopted were based upon a program of investigational work conducted by the Laboratories for the committees. It provides the technical information necessary for the formulation of appliance standards and test methods.

In addition to adopting the seven new standards, the Approval Requirements Committee authorized action on other important matters closely connected with the requirements program.

Most important was authorization of a thorough review of laboratory test gases and pressures employed in the testing program to determine whether those now in use are fully representative of current conditions. Data are particularly desired in the case of liquefied petroleum gases and their mixtures with air in view of numerous changes taking place in the past few years. Both propane and butane from natural gas and refinery sources will be studied, the main objective being to select most representative and suitable test gases for use by the Laboratories.

In order to save testing time and to permit manufacturers more readily to duplicate laboratory tests in their own plants, the committee authorized a new procedure in the conduct of warm-air furnace efficiency tests. Effective immediately for both forced-air and gravity furnaces, a combined flue and jacket loss method will be used. If the appliance is found unsatisfactory or exhibits critical results, a referee retest will be conducted using the present procedure. Research is in progress on a method of further simplifying the test method.

In addition to those standards recently approved by the American Standards Association, several others have been simplified and coordinated and are being circulated to the industry for criticism. These include revised and simplified texts for water heaters, space heaters, unit heaters, and incinerators. Also, the range standards have been further extended to include features devoted to single point ignition of oven and broiler burners. These are eagerly awaited by the industry.

The complete titles of these newly revised standards are:

- American Standard Approval Requirements for Domestic Gas Ranges, Z21.1-1948.
- American Standard Requirements for Installation of Domestic Gas Conversion Burners. (Formerly American Standard Requirements for Installation of Conversion Burners in House Heating and Water Heating Appliances, Z21.8-1948)
- American Standard Approval Requirements for Hot Plates and Laundry Stoves, Z21.9-1948
- American Standard Approval Requirements for Gas Space Heaters, Z21.11-1948
- American Standard Listing Requirements for Domestic Gas Conversion Burners, Z21.17-1948
- American Standard Listing Requirements for Automatic Main Gas Control Valves, Z21.21-1948
- American Standard Approval Requirements for Portable Gas Baking and Roasting Ovens, Z21.28-1948

• • • News Briefs • • •

• • J. Gordon Dakins, former assistant to the president of the National Retail Dry Goods Association, has succeeded Lew Hahn as general manager and assistant treasurer of the association. Mr Hahn, who has held the post for the last fifteen years, is convalescing from a recent illness. He will retain his position as permanent president and treasurer of the NRDGA.

• • William H. Deacy, Jr, who has been an engineer in the Electrical, Electronics, and Photographic Department of the American Standards Association since early in 1943, left the organization on October 1 to assume the position of staff engineer with the Society of Motion Picture Engineers in New York.

• • The eight midwest sections of the American Society for Quality Control are holding their Third Midwest Quality Control Conference in Chicago, November 4 and 5, under the sponsorship of the Chicago Association of Commerce.

The American Gas Association Serves Both Consumer and Industry

SINCE the day it was organized —June 6, 1918—as a result of the merger of two national organizations, the primary purpose of the American Gas Association has remained the same: "to promote and develop the gas industry and to coordinate its activities to the end that it may serve to the fullest possible extent the best interest of the public."

The most obvious step in this direction, from the viewpoint of the consumer, has been the development of the AGA Seal of Approval. This guarantee assures the prospective buyer of the utmost in protection from the purchase of unsafe gas-burning equipment.

To merit this endorsement by the AGA, a manufacturer submits his model to the Testing Laboratories at Cleveland or Los Angeles. If the appliance complies with the latest standards of the Laboratories, a certificate of approval is granted which carries with it the right to use the AGA Seal.[1]

The first Testing Laboratory was established at Cleveland, Ohio, on June 1, 1925. It was intended that this institution should be devoted primarily "to research and testing incident to the development and enforcement of the national standards of safe and efficient gas utilization so long sought by the leaders of the gas industry." The growth of the Laboratory was so rapid that a branch was soon established in Los Angeles. It is estimated that a total of more than thirty-one thousand gas appliances and accessories have undergone practical performance tests in these two laboratories. With 95 percent of all the gas appliances which are currently merchandized, constituting AGA approved models, safety, satisfactory performance, and durable construction have become bywords in the gas appliance field.

[1]The Association's Approval Plan has met the standards set up by the ASA's Sectional Committee on Principles Underlying Valid Certification and Labeling of Commodities and is an excellent example of certification procedure.

One of the first steps in carrying out the Laboratories' program was the organization of national committees and the development of comprehensive requirements. Experts representing producers, consumers, and every affected national general-interest group were enlisted in the preparation of approval, listing, and installation standards.

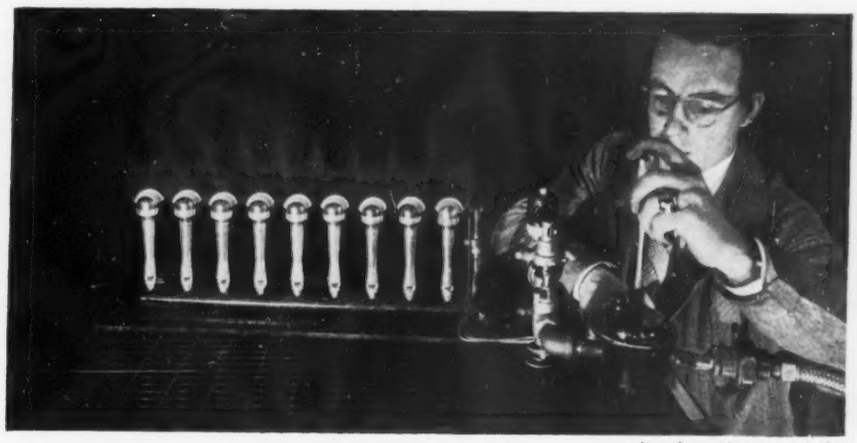
The task of developing standards for the Laboratories to use in testing and approving appliances, was assigned to the AGA Approval Requirements Committee. In September, 1930, this committee was reorganized as a sectional committee under the procedure of the ASA.[2]

Today, each of the Committee's subcommittees is concerned with a specific class of equipment and attends to the preliminary preparation of new requirements and the constant revision and strengthening of existing ones for the class of appliances or accessories falling within its domain. Unusually protracted research by the Laboratories is necessary in the development and periodic revision of these standards. When deemed acceptable by the subcommittee, they are submitted in printed form to all members of the Association for criticism and to all interested members both within and without the industry. Reconsideration is then given to these standards in the light of comments received before the standard is submitted to the Approval Requirements Committee for final approval. These standards are then submitted to the ASA for adoption as American Standard. Thirty-six sets of national standards have been developed in this manner.

[2]The American Gas Association serves as sponsor for ASA Sectional Committee Z21 on Aproval and Installation Requirements for Gas Burning Appliances.

It is interesting to note the trends reflected in the work of the Laboratories. The most recent report (for the year 1947) shows that central heating equipment again indicated the industry trend toward gas house heating in that testing of furnaces and boilers accounted for slightly more than 35 percent of the total volume of work. Likewise, modern needs for more hot water was reflected in that water heater testing ranked next with approximately 21 percent. Space heaters accounted for 14 percent, ranges for 10 percent, while testing of conversion burners, accessories, and miscellaneous comprised the remaining 20 percent of the total.

A constant check on gas-burning equipment is carried out through the inspection service of the Testing Laboratories. Inspectors travel better than seventy-five thousand miles an-



American Gas Association

Checking the automatic controls of a floor furnace heating unit prior to installation and test is one of the many activities of the AGA's Laboratories

nually in checking appliances for conformance with approval standards. More than 25 thousand field inspections have been made in factories, sales floors, warehouses, and consumers' homes by Laboratories' representatives.

The fundamental and applied research conducted by the Association in the fields of production, distribution, and utilization of gas is one of its most important functions. In addition to the Testing Laboratories, many of these research projects are carried out with member companies' facilities. Other projects are sponsored at universities or institutes qualified to carry out these investigations. The research program is designed to answer questions on problems of immediate concern, as well as to provide a basis for future development of the gas industry by fundamental scientific investigations and by applied engineering knowledge. Results of the research are made available to the industry as projects are completed.

The other activities of the AGA are varied and numerous. In its organization, the Association is divided into two departments—the Natural Gas Department which handles matters of special interest to natural gas companies, and the Manufactured Gas Department which handles activities of special interest to the manufactured and mixed gas companies; and a number of Sections and General Committees which cover activities of common interest to all branches of the gas industry.

One of its major tasks is to make available to member companies the most complete information on all phases of gas company operations. To do this, the Association maintains many committees, made up of specialists in their particular fields, in addition to its own staff of experts. Home service work, for example, is directed by a qualified home economist.

A monthly magazine reviews activities of the Association, while a Washington office assists in advising members of the government orders, rulings, and pronouncements directly affecting gas company operations, along with significant legislation, and court and commission decisions which might be of interest to the industry.

In discussing the work of the AGA, one cannot overlook the extensive national cooperative advertising program conducted to promote public acceptance of gas as a modern, efficient fuel for household, industrial, and commercial purposes. It prepares campaigns for the sale of domestic, commercial, and industrial gas appliances and equipment; maintains a Statistical Bureau which collects, collates, and distributes statistics of the gas industry to the daily press, financial publications, government bureaus, and member companies of the association; and prepares, through a publicity bureau, news and publicity releases for this same group.

One of the newest developments of the AGA is the comprehensive Promotion, Advertising, and Research Program which was instituted last year. The Association has great hopes for the PAR plan. They expect that it will revitalize the gas industry, giving it new status in the eyes of the business world.

As an effective instrument of cooperative action for the service of the gas industry and its millions of customers, the American Gas Association has made great strides over the past thirty years.

A Tool for the Purchasing Agent

By E. W. Ely

Chief, Commodity Standards Division
National Bureau of Standards

The ***National Directory of Commodity Specifications*** *and its Supplement are available from the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. The 1945 Directory costs $4.00 a copy; the 1947 Supplement, $2.25. Questions concerning the Directory should be addressed to the Commodity Standards Division, National Bureau of Standards, Washington 25 D. C.*

THE use of dependable specifications—the only logical way to achieve economy in purchasing—has been facilitated for the purchasing agent who wishes to make use of a scientific approach to his problems. His task has been greatly simplified by the National Bureau of Standards which publishes a compilation of all the standards and specifications in general use for commodities produced or purchased in this country. Known as the *National Directory of Commodity Specifications*, the 1947 Supplement of which was made available some time ago, this book briefs, catalogs, and indexes the information needed in buying all tvpes of products.

A specification is a concise, definite, and complete statement of what the buyer requires from the seller. It includes limiting values for the properties necessary to meet the required service, with proper tolerances. Thus, the specification serves as the common meeting ground for manufacturer, distributor, and user.

Large-volume purchases presuppose definite specifications so that the bidder may know definitely just what he will be required to supply. The only alternative to the system of purchase by competitive bids on specifications is purchase on sample. The latter method implies that each bidder's product must be considered independently, and it is often a very

National Bureau of Standards

NBS weathering tests which can simulate the effect of several years of rain and sunlight play an important role in developing paint specifications.

difficult matter to decide betwen different combinations of quality and price. A well-written specification, on the other hand, enables bidders to know exactly what is desired or required and also what procedure the purchaser may follow to satisfy himself that the materials submitted are or are not satisfactory.

Manufacturers are realizing more and more the importance of a careful selection of the material that goes into the finished product. To determine the value of any material for a given purpose, its properties must be measured. Standardized methods of test, based upon conditions met in service, avoid friction between buyer and seller and are a necessary part of an adequate specification for a raw material or a manufactured article. For this reason, a satisfactory specification is not easily prepared. The really essential qualities of a product cannot be determined from mere inspection. Laboratory research is necessary and this sometimes involves months or even years of work. The method used in testing must likewise be developed with great care. Accelerated tests are necessary in many instances, creating one of the most difficult phases of commodity testing. Experience alone can determine whether an accelerated service test, carried out in a few days in the laboratory, actually represents with sufficient fidelity years of exposure to sunlight and rain or the ravages of wear.

The Federal Government is the largest single purchaser of consumer goods in this country. Obviously, the purchases of an organization of this size can be made to greater advantage under carefully prepared specifications. Prior to 1921, each agency of the Government had its own specifications for all materials it purchased, the requirements often being in conflict with each other and seldom in conformity with commercial practice. To avoid duplication of effort in the procurement of material, and to insure better utilization of the national resources and industries, the Federal Specifications Board was established and given the duty of not only compiling and adopting standard specifications but also of bringing them into harmony with the best commercial practice wherever conditions permit. The Board is made up of qualified representatives from the various branches of the Government, and has the Director of the National Bureau of Standards as *ex officio* chairman.

Nearly 80 Technical Committees Formulate Federal Specifications

Each Federal Specification, of which there are now more than 1900, is formulated by one of nearly 80 Federal Specifications Technical Committees consisting of official representatives of every department and establishment interested in the commodity covered by the specification. Members of the staff of the National Bureau of Standards act as chairmen of between one-third and one-half of these committees. Full consideration is also given to such advice as is obtained from commercial and industrial concerns. The specification thus prepared by the technical committee is submitted to all Government agencies and to interested engineering and technical societies for comment and criticism. All criticisms received are given consideration in placing the specification in final form for use in Government purchasing. Federal Specifications are continually being revised to keep them abreast of the best current manufacturing practice and the needs of the Government.

In addition to Federal Specifications adopted by the Federal Specifications Board, a number of Government agencies formulate and maintain specifications for commodities in which they have a special interest. These include specifications for articles purchased almost exclusively by one or two agencies—such as the Joint Army-Navy Specifications, Army specifications, Navy specifications, Air Force specifications, and Veterans Administration Specifications—and the standards for foods, drugs, and agricultural products established by the Food and Drug Administration and the Department of Agriculture.

Many Industrial Groups Connected With Standardization Activities

Realizing the need for specifications based on research and testing, industrial and engineering groups have also been active in the formulation of purchasing standards. Some of the technical societies conducting or associated with standardization activities are the American Standards Association, the American Society for Testing Materials, the American Society of Mechanical Engineers, the Society of Automotive Engineers, and the National Aircraft Standards Committee. Many of the trade associations and similar industrial groups are deeply interested in simplification as well as standardization.

An important phase of the work of the National Bureau of Standards has consisted in cooperation with the Federal Specifications Board and other standardizing agencies in the development and improvement of specifications and in the testing of Government purchases for conformity with specification requirements. Considerable experimental investigation is carried on at the Bureau in the development of test methods, which are so often indispensable before a spe-

cification can be framed or applied. The Bureau's extensive facilities have been utilized in the design of many accelerated tests, such as weathering tests of paints and aging tests for synthetic rubbers. This type of work has provided an excellent opportunity to observe the value of purchasing by specifications.

With the object of bringing about the widespread use of specifications for purchasing, and in order to provide a background for the development of better specifications, the Bureau undertook the compilation of a classified list of specifications which had been formulated not only by public purchasing agencies but also by nongovernmental organizations having national recognition. The result was a guide for both specification writers and buyers of commodities—the *National Directory of Commodity Specifications.*

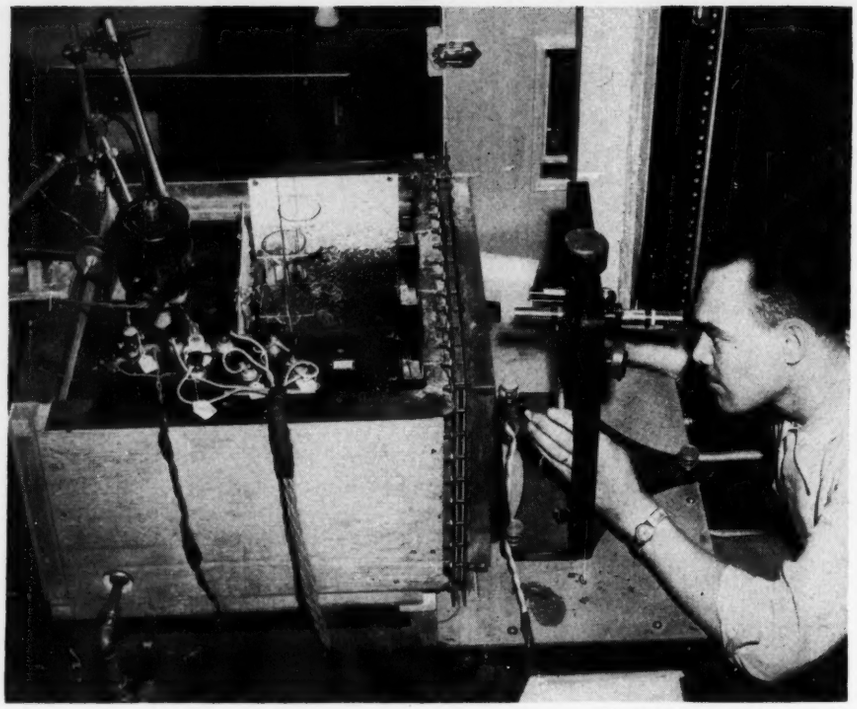
More Than 500 Organizations Contacted for Current Material

In compiling this material, a strenuous effort was made to obtain current information concerning useful standards and specifications from all national organizations that represent industry, or some branch of industry, and that are known to be interested in the formulation of commodity specifications. Consequently, more than 500 such organizations were contacted, including trade associations, technical societies, and the various purchasing agencies of the Federal Government.

Each standard, specification, simplification, code, safety rule, and similar document for general use was examined in order to determine its particular place in the general system of arrangement. Every effort was made to summarize, classify, and index the material in such a way that it would give the user complete and valuable information.

The 1945 revision of the Directory, consisting of 1311 pages, was rapidly and widely distributed, but under post-war conditions additional information on new commodities was an obvious necessity. However, instead of issuing an entirely new volume, the National Bureau of Standards has placed all of the new information in a 322-page Supplement.

The two volumes provide a complete listing by name, designating organization of all the standards, number, and issuing or sponsoring specifications, and methods of test in general use in this country. Included are the voluntary Simplified Practice Recommendations and the voluntary Commercial Standards which have been developed by industry under the cooperative procedure of the National Bureau of Standards. Many items are not strictly commodity specifications but closely related information essential to most users. Each specification, of which there are a total of 44,000, is briefly summarized as to technical characteristics, scope, and special applications. An extensive alphabetical index lists individual items under their various trade and technical names in order to facilitate the ready location of any item. A list of addresses of the issuing or sponsoring organizations is also provided, from whom copies of the standards and specifications may be obtained.



National Bureau of Standards

Studies of basic properties in materials, such as this test to determine molecular weight of a plastic substance, provide valuable data for future work.

Needs of New Manufacturers Given Special Consideration

The material in the Directory and Supplement is especially coordinated for the use of new manufacturers who need detailed information concerning finished goods or practical data on available materials. It is equally valuable to old established manufacturers who desire to introduce new products or to use materials with which they are not familiar. This information is also useful to Government procurement officers in purchasing commodities for which no Federal Specifications exist. In such cases there is often found in the Directory or its Supplement, a suitable specification which may be used as a procurement document at the discretion of the purchasing officer.

The grouping together of items related to the same subjects or commodities is made possible by a decimal system of classification in the issues of the Directory that have been published to date. In future revisions, a new classification system which is expected to be adopted generally by Government and nongovernmental agencies will be used. Every effort will be made to increase the usefulness of the Directory.

Standards World Expands Its Editorial Board

The new quarterly journal of standardization, *Standards World*, announces the addition of several other members to its Editorial Advisory Board. They are:

Dr P. G. Agnew, Consultant, American Standards Association
Dr Paulo Sá, Director, Brazilian Standards Association
Dr Ing Carlo Rossi, Director-Secretary, Ente Italiano di Unificazione
Dr Lal Verman, Director, Indian Standards Institution

The first issue of *Standards World* is scheduled to appear sometime in the latter part of December.

Mysterious Symbolism

A Specter of the Past!

By Harold K. Hughes

The physical sciences need no longer be haunted by the confusion that exists through the use of inconsistent letter symbols in equations. Uniformity has now been agreed upon in order to simplify the reading of mathematical formulas

***Mr Hughes,** chairman of the subcommittee on physics under ASA Sectional Committee Z10, Letter Symbols and Abbreviations for Science and Engineering, is connected with the Socony Vacuum Laboratories. Among his other associations, Mr Hughes has also been affiliated with Newark University, and Bard College, Columbia University.*

"$a_7c_5d_1e_5g_1h_1i_7l_4m_2n_9o_4p_2q_1r_2s_1t_5u_5$"

THUS Huygens wrote, in 1656, to announce his discovery that "Saturn is surrounded by a slender flat ring, nowhere adhering to it, and inclined to the ecliptic." The letters of the anagram, when rearranged, make the Latin version: "Saturnus, cingitur annulo tenui, plano, nusquam coherente et ad eclipticam inclinato."

Many scientific discoveries of Huygens' day were couched in equally mysterious symbolism. While today there no longer persists this attitude of secretiveness in the physical sciences, we are often faced with the same problem of interpreting an author's meaning because he uses unfamiliar symbolism in equations. Since the recently adopted American Standard Letter Symbols for Physics, Z10.6-1948, attempts to correct this situation, this standard should be received with great acclaim.

The object of standardization of symbols used in mathematical formulas is to eliminate—or, at least, to minimize—the language impediment. For example, in three different books on atomic spectra, we find the symbol ν used in three senses: to denote energy, frequency, and wave number. When we consult the three books on the same topic and read three equations of essentially equivalent meaning but different appearance, it is a matter of much loss of time to disentangle the confusion. For students, the net result is likely to be that they are never sure, in their memory, of any one of the three forms. Frequently, an author falls into this error in different parts of the same book. When all authors use the same symbol for a magnitude, students will soon become familiar with it and will be saved a great deal of puzzlement.

Fortunately, there is no longer the feeling that once existed that it is a beneficial training of the mind to puzzle over the symbols and other language of an author. Now most people agree that symbol standardization really provides a desirable economy in mental effort.

It was with this basic thought in mind that sectional committee Z10 which developed the new letter sym-

At the present time, 12 subcommittees are operating under Sectional Committee Z10. They have been assigned the study of symbols or abbreviations for mathematics, hydraulics, mechanics, structural analysis, heat and thermodynamics, illuminating engineering, aeronautics and aerodynamics, electrical quantities, radio, physics, scientific and engineering terms, and chemical engineering.

Already completed and available for use are these American Standards in the letter symbols series:

Mathematical Symbols, Z10f-1928
Abbreviations for Scientific and Engineering Terms, Z10.1-1941
Letter Symbols for Hydraulics, Z10.2-1942
Letter Symbols for Mechanics of Solid Bodies, Z10.3-1948
Letter Symbols for Heat and Thermodynamics Including Heat Flow, Z10.4-1943
Letter Symbols for Chemical Engineering, Z10.12-1946
Illuminating Engineering Nomenclature and Photometric Standards, Z7.1-1942
Letter Symbols for Gear Engineering, B6.5-1943

Two other standards in this series—Letter Symbols for Electrical Quantities, Z10gl-1929, and Aeronautical Symbols, Z10e-1930, are under revision.

American Standard Letter Symbols for Physics, Z10.6-1948, was developed by Subcommittee 10 with the following members:

Harold K. Hughes, Socony-Vacuum Laboratories, *Chairman*
E. L. Chaffee, Harvard University
A. W. Foster, University of Western Ontario
A. T. Jones, Smith College
Victor F. Lenzen, University of California
Duane Roller, Wabash College
Mark W. Zemansky, College of the City of New York

bols standard, was set up in 1926 as a committee on scientific and engineering symbols and abbreviations. Organized under the procedure of the American Standards Engineering Committee (predecessor of the American Standards Association), it was sponsored by five societies: the American Association for the Advancement of Science, the American Institute of Electrical Engineers, the American Society of Civil Engineers, the American Society of Mechanical Engineers, and the Society for the Promotion of Engineering Education.

The committee was reorganized in 1936 and now consists of representatives of 36 national societies, associations, and governmental departments. The same societies still sponsor the project, although the Society for the Promotion of Engineering Education has changed its name to the American Society for Engineering Education.

Standard Physics Symbols Latest In the Letter Symbols Series

Standard letter symbols covering many phases of scientific terminology have been approved since those early days of the committee and all have been well received. Letter Symbols for Physics is the latest in the series.

At the outset, the subcommittee which was assigned the task of standardizing letter symbols for physics recognized that it faced a number of difficult problems, the handling of which would eventually determine the success or failure of its work. Because physics covers such a wide field, the committee endeavored to keep itself informed on the work of all other symbol committees and to cooperate with them in choosing uniform symbols wherever possible. Physical journals, textbooks, and reference works were searched in order to compile a factual survey of current usage, and the proposals of all other symbol committees, both in the United States and abroad, were noted. The committee studied this master list carefully—first, the noncontroversial and, then, the controversial symbols.

Much thought had to be given to the question of how far to go in standardization. In this the members tried to steer a middle course. Included are all common terms in elementary physics and some in advanced physics and related fields. Most symbols in mathematics, crystallography, meteorology, x-rays, statistics, and so forth, have been omitted. In fact, the section of the committee's master file labeled "morgue" is nearly as extensive as the recommended list. Some of the decisions to omit or include quantities were admittedly arbitrary and were dictated, in part, by practical considerations. No attempt was made to standardize symbols for a subject in process of formation, even though, as in the case of nuclear physics, parts of it have crept into recent elementary texts.

There has been general agreement among physicists that some measure of standardization is desirable. One notable exception was an eminent author who disagreed in principle with the basic objective of the committee and thought "it would be very well were the work of such committees allowed to remain buried in the obscurity in which they were written."

At the other extreme stood the late Dr Sanford A. Moss, whose enthusiasm extended to attempts at international standardization. The International Electrotechnical Commission is the only agency which has so far produced standard symbols on a world basis. In this matter, the committee felt that much was to be accomplished through a study of the United States field first and left international standardization to its successors.

As an illustration of the problems of standardization, consider the group of electrical symbols which have, without doubt, been the most difficult to choose. Though small in number, these have received a disproportionate share of attention by the committee. The steps that led to the final recommendations are illustrative of the careful weighing of conflicting demands, which was also done in many other cases.

Three Factors Contribute To Divergencies in Usage

Contributing to produce the divergencies in usage are three factors: (1) physicists and engineers use some of the quantities in different context; (2) even among physicists, the meaning of some of these is moot; (3) for the most part, neither physicists nor engineers appreciate each other's needs, or the need to choose a group of symbols simultaneously. The development of radar during the war, principally by physicists, has had a genuinely salutary effect on this situation.

Table 1 lists this group of quantities, the various proposals for symbols made to the committee, and also the committee's recommendations. Only a little consideration is needed to recognize the many relations among these quantities that make separate symbols desirable for each of them. Further study shows that this is practically impossible, considering the extent to which some symbols are already in use and the limited number of symbols available.

Table 1. Some of the letter symbols proposed for use in electricity and the symbols that were accepted for approval as American Standards.

Quantity	Symbols Proposed to Committee	American Standard Symbols
Area	A, S, σ	A, S, σ
Current density	A, a, i, j, J, S, u	J
Electric conductivity	σ, γ, κ	σ, (γ)
Electric dipole moment	p, μ, μ_e	μ, μ_e
Electric field strength	X, E, $\mathcal{E}$, K, F	E
Electric moment	p, μ	p
Electric potential	E, V, v	V
Electric susceptibility	η, ϵ	η
Electromotive force (emf)	E, $\mathcal{E}$, V, $\mathcal{F}$	$\mathcal{E}$, (E)
Energy	u, U, E, W, T	See main list
Magnetic dipole moment	μ, μ_m	μ, μ_m
Magnetic moment	μ, m	m
Magnetic pole strength	p	p
Magnetic susceptibility	k, K, κ, χ	k
Magnetization	M, J, I	M
Moment of inertia	I, K, J	I, (J)
Naperian base	e, ϵ, exp	e, ϵ
Permittivity (dielec. coef.)	k, K, ϵ, κ	ϵ
Velocity	C, c, u, v, w, a	See main list
Volume	V, v, τ	V, (τ)
Weight (gravitational force)	w, W, G, F	w, F, (W)
Work	w, W	W, (w)

These electrical quantities are so important that the committee was loath to avoid the issue by placing them in its supplementary list of magnitudes which the members felt should be assigned standard letter symbols but upon which no agreement was reached. Therefore, a meticulous survey was made of the usage in all well-known books, experts in the field were consulted, and, finally, all of these facts were collected in a ten-page "Revision C," together with the recommendations of other committees and of all of this committee's correspondents. Rather surprisingly, when all of the evidence was before them, the members found that most of the choices were obvious.

Agreement Reached by Subcommittee

While use of this list may produce some changes, the members believe that they have studied the controversial electrical group of symbols as thoroughly as any committee can. With the exception of the use of K for electric field strength by Subcommittee No. 8 on Electric Quantities, the committee is pleased to report full agreement on this list by all other subcommittees.

Now that agreement has been reached by the committee on standard letter symbols for physics, the next step is to bring this accomplishment to the attention of those who would derive the most use from them. A move in this direction has already been made by the recent inclusion of these symbols in two important texts: *Handbook of Chemistry and Physics* and *Handbook of Chemistry*.

Ten Projects Under Way In ESC Electronics Division

THE new Communications and Electronics Division of the Electrical Standards Committee held its first meeting September 10 to organize its work and review the committees which will come under its jurisdiction. Dr. W. R. C. Baker, vice-president of the General Electric Company, representing the Radio Manufacturers Association, is chairman of the Division.

The Power Division of the ESC plans to hold its organization meeting in the near future.

The two divisions were set up by the Committee because of the increasing amount of work on communications and electronics and as a means of expanding the national standardization program in these fields. Previously, standards on communications and electronics and power had all been covered in the ESC as a single unit.

The committees under the jurisdiction of the Electrical Standards Committee have been allocated to the two divisions, and each division has been asked to review the committees for which it is responsible to determine whether the committee is still necessary and to consider its scope, sponsorship, and personnel.

Action was taken by the Communications and Electronics Division on the following projects under its supervision:

Radio, C16—

Sponsor: Institute of Radio Engineers

The Division is recommending to the Institute of Radio Engineers, sponsor, that the scope be changed to include radio components except electron tubes and that the committee be reorganized. It was recommended that work on this project go forward actively.

Dry Cells and Batteries, C18—

Sponsor: National Bureau of Standards

This committee completed a revision of the standard for dry cells and batteries in December 1947. The sponsor is being asked to review the personnel of the committee.

Standardization of Electron Tubes, C60—

The Division recommended that the scope of the project be changed to cover definitions, classification, methods of rating and testing, dimensions and interchangeability of electron tubes rather than "vacuum tubes for power and industrial applications." It is also recommending that the Joint Electron Tube Engineering Council be invited to replace the Electrical Standards Committee as sponsor.

Radio-Electrical Coordination, C63—

Sponsor: Radio Manufacturers Association

The chairman of this committee was asked to report further to the chairman of the Division on the work of the committee and the sponsorship.

Power-Operated Radio Receiving Appliances, C65—

No sectional committee has been organized for this project, which has operated under the Proprietory Method, with the Underwriters' Laboratories acting as proprietary sponsor for the standard which it developed, circulated widely for approval, and submitted to ASA. Several editions of the standard have been developed by this method. The project is being continued under its present setup.

Radio (War Project), C75—

Because all of the C75 American War Standards except three have been incorporated into JAN specifications and these three have been included in draft JAN specifications, the Division decided that these War Standards are no longer necessary. It therefore recommended to the Electrical Standards Committee that their approval be withdrawn.

Joint Army and Navy Specifications for Electronic Components—

A group of 47 JAN Specifications for the electronic components which were under the jurisdiction of the Army-Navy Electronic and Electrical Standards Agency have been submitted to the American Standards Association by the chairman of the Munitions Board. These call for a high grade of components suitable for use under the severe conditions incident to military service. Discussion indicated that there is a considerable use of components of this quality in industry as well, and that if American Standards could be approved, both industry and the Armed Forces would benefit through better knowledge of specification requirements. Purchasing organizations would be left free to use their customary acceptance testing procedure, it was explained. It was decided to allocate these JAN specifications in the field of electronics to appropriate sectional committees. If some of them fall in the power field they will be referred to the chairman of the Power Division for allocation to the appropriate Committees in that field.

Electrical Measuring Instruments, C39—

This committee, which is now completing a standard covering panel and switchboard instruments, will be continued as it is for the present.

Acoustical Measurements and Terminology, Z24—

Sponsor: Acoustical Society of America

Standards for Sound Recording, Z57—

Sponsors: Society of Motion Picture Engineers; Institute of Radio Engineers

The Standards Council is being asked to place these two committees under the supervision of the Electrical Standards Committee. They are now working under the Board of Examination.

NFPA Announces New Plan For Electrical Code Committee

ACTION has been taken by the NFPA Committee on Technical Committee Procedure, a committee of the Board of Directors, to put into effect the reorganization of the Electrical Committee which was adopted in principle by the Board at their 1947 summer meeting and was announced in the October *News Letter*. The plan finally adopted, subject to confirmation by the Board of Directors, has the same essential features as originally announced but has been modified in some details to meet the suggestions registered as a result of the preliminary announcement. The Committee on Technical Committee Procedure has voted to take the following action:

1. Discharge the present Electrical Committee. (Every individual now active on the committee will be given opportunity to have some important part in the development of the National Electrical Code under the new plan described below).

2. Create an NFPA Electrical Section, to which all associate members and representatives of organization members interested in electrical matters will be eligible, the Section to operate under the procedure established for all NFPA sections (see Year Book) and the following:

The Chairman and Secretary of the Electrical Correlating Committee shall be ex-officio Chairman and Secretary of the Electrical Section. The Section may elect such other officers as it may desire.

Section committees having Code-making functions as hereinafter described shall be appointed by the Electrical Correlating Committee, subject to approval by the NFPA Board of Directors. The Section may create committees other than Code-making committees as it may desire.

The Section shall consider and may make recommendations on changes in the National Electrical Code as presented by Code-making committees and may consider any matters of electrical interest.

Call the first meeting of the Section at the time of the 1948 NFPA annual meeting, and invite all present members of the Electrical Committee, alternates, Article and technical subcommittee members and others interested to attend.

3. Create an Electrical Correlating Committee, with personnel appointed by the NFPA Board of Directors, the membership selected on a personal basis including individuals best qualified to perform the functions of this committee, selected from among the principal groups concerned with the development of the National Electrical Code but not designated as representatives of individual organizations. The functions of this committee will include:

> The program for carrying on the work of the National Electrical Code as described here is presented as a report of the activities of the sponsor for the Code. It is a reprint of an announcement issued by the National Fire Protection Association.

(a) General supervision of policies and the various activities incident to the development of the National Electrical Code.

(b) Appointment of Code-making committee of the Electrical Section, subject to confirmation by the NFPA Board of Directors.

(c) Determination of the scope of activities of Code-making committees.

(d) Appointment of any other committees considered necessary or desirable in the development, interpretation and application of the National Electrical Code.

(e) Review and correlate reports of Code-making committees, and after approval submit successive new editions or amendment of the National Electrical Code to the NFPA for adoption and subsequent submission to the American Standards Association.

(f) Establish rules of procedure for the operation of Code-making committees and the various steps in the handling of Code changes and Code interpretations, subject to the approval of the NFPA Committee on Technical Committee Procedure.

Appoint the Electrical Correlating Committee. (Alvah Small has been designated as chairman and nine members appointed. Announcement of personnel will be made after appointments are accepted.)

4. Transfer to Code-making committees of the Electrical Section the function of developing new or revised text for the National Electrical Code, these committees to take the place of existing Article Committees.

Authorize the Electrical Correlating Committee to proceed with the organization and appointment of these committees, subject to approval by the NFPA Board of Directors, the personnel of each to be selected from groups previously participating in the work of the Electrical Committee, and from among any others who in the judgment of the Electrical Correlating Committee can make a valuable contribution, the organization of each committee to be such as to assure a proper balance of representation of the groups principally concerned, in accordance with the principles of organization established by the American Standards Association for sectional committees.

Suggest to the Electrical Correlating Committee that the orderly development of the Code might be best served by having not more than about 20 Code-making committees each responsible for a number of articles, rather than a separate committee for each article, and that the names of such committees might be descriptive of the subject matter covered by each, thus facilitating understanding of the functions of these committees by persons unfamiliar with the detail of the Code.

5. Instruct the Electrical Correlating Committee to prepare rules of procedure for the handling of revisions of the Code, in general conformity with the NFPA Regulations on Technical Committee Procedure and subject to approval by the NFPA Board of Directors or Annual Meeting, to provide for the following:

(a) Opportunity for any organization or individual to propose Code changes, specifying the manner in which such proposals should be made, and a stop date after which proposals cannot be entertained for any given revision of the Code.

(b) Consideration of proposals by Code-making committees, and the publication of tentative committee reports giving specific amendments of the Code.

(c) Presentation of such reports to the NFPA Electrical Section for discussion and comment, also suitable opportunity for consideration of tentative reports by the International Association of Electrical Inspectors and other organizations interested.

(d) Consideration by Code-making committees of all suggestions registered as a result of consideration by the NFPA Electrical Section and others, subject to any provisions as to form of filing of comments and time limits as may be found necessary to the orderly handling of such matters.

(e) Submission of final revised reports to Electrical Correlating Committee.

(f) Approval by Correlating Committee after any necessary adjustment of inconsistencies between reports, editing, reference back to Code-making committees for further consideration of matters which in the opinion of the Correlating Committee are not properly treated, or any other action which may appear necessary or desirable in the interest of the National Electrical Code.

(g) Submission of completed Code changes for adoption by the National Fire Protection Association in accordance with established procedures for handling reports of NFPA technical committees, and subsequent submission by the NFPA to the American Standards Association for approval as American Standard.

(h) Establishment of procedure for handling Tentative Interim Amendments.

(i) Establishment of procedure for Code interpretations.

ASA STANDARDS ACTIVITIES

Status of Standards As Of October 8, 1948

American Standards Approved Since September 10, 1948

Practice for School Lighting, A23.1-1948
Sponsors: American Institute of Architects; Illuminating Engineering Society

Revision of Discoloration Test of the Safety Code for Safety Glass for Glazing Motor Vehicles Operating on Land Highways, Z26.1a-1948 (Revision of Z26-1-1938)
Sponsors: Accident Prevention Department, Association of Casualty and Surety Companies; National Bureau of Standards.

Specifications for Slab Zinc (Spelter), H24.1-1948 (Revision of ASTM B6-46; ASA H24.1-1946)
Specifications for Copper Water Tube H23.1-1948 (Revision of ASTM B88-47; ASA H23.1-1947)
Specifications for Copper and Copper-Base Alloy Forging Rods, Bars, and Shapes, H7.1-1948 (Revision of ASTM B124-47; ASA H7.1-1947)
Specifications for Zinc-Coated (Galvanized) Iron or Steel Farm-Field and Railroad Right-of-Way Wire Fencing, G8.9-1948 (Revision of ASTM A116-39; ASA G8.9-1944)
Specifications for Zinc-Coated (Galvanized) Iron or Steel Barbed Wire, G8.10-1948 (Revision of ASTM A121-39; ASA G8.10-1944)
Specifications for Gray Iron Castings, G25.1-1948 (Revision of ASTM A48-46; ASA G25.1-1947)
Method of Drop Shatter Test for Coke, K20.4-1948 (Revision of ASTM D141-23; ASA K20.4-1936)
Methods of Laboratory Sampling and Analysis of Coal and Coke, K18.1-1948 (Revision of ASTM D271-46; ASA K18.1-1946)
Proprietary Sponsor: American Society for Testing Materials

Graphical Symbols for Electron Devices, Z32.10-1948 (Revision of Z32.10-1944)
Sponsors: American Society of Mechanical Engineers; American Institute of Electrical Engineers

Approval Requirements for Domestic Gas Ranges, Z21.1-1948 (Revision of Z21.1-1942)
Requirements for Installation of Domestic Gas Conversion Burners (formerly American Standard Requirements for Installation of Conversion Burners in House Heating and Water Heating Appliances), Z21.8-1948 (Revision of Z21.8-1940)
Approval Requirements for Hot Plates and Laundry Stoves, Z21.9-1948 (Revision of Z21.9-1940)
Approval Requirements for Gas Space Heaters, Z21.11-1948 (Revision of Z21.11-1942)
Listing Requirements for Domestic Gas Conversion Burners, Z21.17-1948 (Revision of Z21.17-1940)
Listing Requirements for Automatic Main Gas Control Valves, Z21.21-1948 (Revision of Z21.21-1935)
Approval Requirements for Portable Gas Baking and Roasting Ovens, Z21.28-1948 (Revision of Z21.28-1941)
Sponsor: American Gas Association

Letter Symbols for Physics, Z10.6-1948
Sponsors: American Association for the Advancement of Science; American Institute of Electrical Engineers; American Society of Civil Engineers; American Society for Engineering Education; American Society of Mechanical Engineers

Dimensions for Theater Projection Screens, Z22.29-1948 (Revision of Z22.29-1946)
Theater Sound Test Film for 35-Millimeter Motion Picture Sound Reproducing Systems, Z22.60-1948
Laboratory-Type Sound Focusing Test Film for 35-Millimeter Motion Picture Sound Reproducers, Z22.62-1948
Service-Type Scanning Beam Uniformity Test Film for 35-Millimeter Motion Picture Sound Reproducers, Z22.65-1948
Laboratory-Type Scanning Beam Uniformity Test Film for 35-Millimeter Motion Picture Sound Reproducers, Z22.66-1948
1000-Cycle Balancing Test Film for 35-Millimeter Motion Picture Sound Reproducers, Z22.67-1948
Sound Record and Scanning Area of Double Width Push-Pull Sound Prints (Centerline Type), Z22.69-1948
Sound Record and Scanning Area of Double Width Push-Pull Sound Prints (Off-set Centerline Type), Z22.70-1948
Sponsor: Society of Motion Picture Engineers

Standards Being Considered for Approval

By the Board of Review—

Allowable Concentration of Manganese (American War Standard), Z37.6-1942
Sponsor: U. S. Public Health Service

By the Board of Examination—

Dimensions for Radiographic Intensifying Screens, Z38.1.50
Method for Determining the Melting Point of the Photographic Layer of Films, Plates, and Papers, Z38.8.20
Dimensions for 70-Millimeter Perforated (and Unperforated) Film (Revision of Z38.1.2-1941)
Sponsor: Optical Society of America

Specifications for Salt-Water Soap (ASTM D 593-42; K60.13)
Specifications for Liquid Toilet Soap (ASTM D 799-45; K60.14)
Specifications for Olive Oil Chip Soap (Type A, Pure; Type B, Blended) (ASTM D 630-42; K60.15)
Specifications for Palm Oil Chip Soap (Type A, Straight; Type B. Blended) (ASTM D 536-42; ASA K60.16)
Specifications for Modified Soda (Sesquicarbonate Type) (ASTM D 457-39; ASA K60.17)
Specifications for Sodium Metasilicate (ASTM D 537-41; ASA K60.18)
Specifications for Sodium Sesquisilicate (ASTM D 594-41; ASA K60.19)
Specifications for Tetrasodium Pyrophosphate (Anhydrous) (ASTM D 595-45; ASA K60.20)
Methods of Sampling and Chemical Analysis of Special Detergents (ASTM D 501-46; ASA K60.21)
Sponsor: American Society for Testing Materials

By the Consumer Goods Committee—

Accelerated Ageing of Textile Dyes with Sulfur, L14.1
Colorfastness of Textiles to Acids and Alkalies, L14.2
Colorfastness of Wool Textiles to Carbonizing, L14.3
Colorfastness of Silk to Degumming, L14.4
Colorfastness of Textiles to Fulling, L14.5
Colorfastness of Wool Textiles to Mill Washing and Scouring, L14.6
Colorfastness of Silk to Peroxide Bleaching, L14.7
Colorfastness of Textiles to Sea Water, L14.8
Colorfastness of Textiles to Stoving, L14.9
Test for Mercerization, L14.10
Evaluation of Wetting Agents, L14.11
Definition of Terms Relating to Textile Materials (ASTM D 123-47; ASA L14.12)
General Methods of Testing and Tolerances for Cotton Yarn (Tentative) (ASTM D 180-47T; ASA L14.13)
Methods of Testing and Tolerances for Cotton Sewing Threads (ASTM D 204-42; ASA L14.14)
Methods of Test for Osnaburg, Cement Sacks (ASTM D 205-39; ASA L14.15)
Methods of Testing and Tolerances for Woven Tapes (ASTM D 259-44; ASA L14.16)
Methods of Testing and Tolerances for Certain Light and Medium Weight Cotton Fabrics (ASTM D 274-36; ASA L14.17)
Methods of Test for Asbestos Yarns (ASTM D 299-42; ASA L14.18)
Method of Determining Relative Humidity (ASTM D 337-34; ASA L14.19)
Methods of Test for Holland Cloth (ASTM D 376-35; ASA L14.20)
Methods of Testing and Tolerances for Woolen Yarns (ASTM D 403-44; ASA L14.21)
Methods of Testing and Tolerances for Worsted Yarns (ASTM D 404-44; ASA L14.22)
General Methods of Testing Cotton Fibers (Tentative) (ASTM D 414-47T; ASA L14.23)
Method of Test for Strength of Rayon Woven Fabric When Wet (ASTM D 415-38; ASA L14.24)
Method of Testing Pile Floor Covering (ASTM D 418-42; ASA L14.25)
Methods of Test for Fineness of Wool (Tentative) (ASTM D 419-47T; ASA L14.26)

By the Consumer Goods Committee (Continued)

Methods of Testing and Tolerances for Certain Carded Cotton Gray Goods (ASTM D 433-39; ASA L14.27)

Methods of Testing and Tolerances for Certain Wool and Part Wool Fabrics (ASTM D 462-44; ASA L14.28)

Methods of Test for Fineness of Wool Tops (Tentative) (ASTM D 472-47T; ASA L14.29)

Methods of Testing and Tolerances for Spun Rayon Yarns and Threads (ASTM D 507-44; ASA L14.30)

Methods of Testing and Tolerances for Yarns Spun from Mixed Fibers (ASTM D 508-43; ASA L14.31)

Method of Test for Fiber Length of Wool (ASTM D 519-40; ASA L14.32)

Methods of Testing Rayon Staple (ASTM D 540-44; ASA L14.33)

Methods of Testing and Tolerances for Single Jute Yarn (ASTM D 541-41; ASA L14.34)

Methods of Testing Woven Asbestos Cloth (ASTM D 577-42; ASA L14.35)

Methods of Testing and Tolerances for Glass Yarn (Tentative) (ASTM D 578-47T; ASA L14.36)

Methods of Testing and Tolerances for Woven Glass Fabrics (ASTM D 579-47; ASA L14.37)

Methods of Testing and Tolerances for Woven Glass Tapes (ASTM D 580-47; ASA L14.38)

Methods of Testing and Tolerances for Woven Glass Tubular Sleeving and Braids (ASTM D 581-44; ASA L14.39)

Method of Test for Hard Scoured Wool in Wool in the Grease (Laboratory Scale Operations) (ASTM D 584-47; ASA L14.40)

Methods of Testing Asbestos Tubular Sleeving (ASTM D 628-44; ASA L14.41)

Methods of Testing and Tolerances for Certain Fine Staple Cotton Gray Goods (ASTM D 679-44; ASA L14.42)

Methods for Testing and Tolerances for Certain All-Cotton and Cotton-and-Rayon Fine Fancy Goods (ASTM D 680-44; ASA L14.43)

Methods of Testing and Tolerances for Jute Rove and Plied Yarn for Electrical and Packing Purposes (Tentative) (ASTM D 681-42T; ASA L14.44)

Methods of Testing and Tolerances for Rope (Leaf and Bast Fibers) (ASTM D 738-46; ASA L14.45)

Methods of Testing and Tolerances for Spun, Twisted, or Braided Products Made from Flax, Hemp, Ramie, or Mixtures Thereof (ASTM D 739-46; ASA L14.46)

Method of Test for Compatibility of Glass Yarn with Insulating Varnish (Tentative) (ASTM D 886-46 T; ASA L14.47)

Recommended Practice for a Universal System of Yarn Numbering (ASTM D 861-47; ASA L14.48)

Sponsors: American Society for Testing Materials; American Association of Textile Chemists and Colorists

Chip Soap (ASTM D 496-39; ASA K60.1)

Ordinary Bar Soap (ASTM D 497-39; ASA K60.2)

Powdered Soap (ASTM D 498-39; ASA K60.3)

White Floating Toilet Soap (ASTM D 499-39; ASA K60.4)

Alkaline Soap Powder (ASTM D 534-42; ASA K60.5)

Milled Toilet Soap (ASTM D 455-39; ASA K60.6)

Built Soap, Powdered (ASTM D 533-44; ASA K60.7)

Compound Chip Soap (With Rosin) (ASTM D 690-44; ASA K60.8)

By the Consumer Goods Committee (Continued)

Compound Powdered Soap (Granulated, with Rosin) (ASTM D 691-44; ASA K60.9)

Caustic Soda (ASTM D 456-39; ASA K60.10)

Soda Ash (ASTM D 458-39; ASA K60.11)

Trisodium Phosphate (ASTM D 538-44; ASA K60.12)

Sponsor: American Society for Testing Materials

Specifications for Sheets and Pillowcases, L4.1

Sponsor: American Hospital Association

By the Building Code Correlating Committee

Administrative Requirements for Building Codes, A55 (Revision of A55.1-1944)

Sponsors: American Municipal Association; Building Officials Conference of America

By the Mechanical Standards Committee—

Cast-Iron Pipe Flanges and Flanged Fittings (Class 125), B16.1 (Revision of B16a-1939)

Sponsors: Heating, Piping, and Air Conditioning National Association; Manufacturers Society of the Valve and Fittings Industry; American Society of Mechanical Engineers

By the Safety Code Correlating Committee—

Allowable Concentration of Methyl Chloride, Z37.18

Endorsing Sponsor: U. S. Department of Interior, Bureau of Mines

Standards Submitted to ASA for Approval

Standard Specifications for Carbon and Alloy-Steel Nuts for Bolts for High-Pressure and High-Temperature Service (Revision of ASTM A194-1946; ASA G38.1-1948)

Sponsor: American Society for Testing Materials

American Standards Being Considered for Reaffirmation

By the Board of Examination—

Designation of Emulsion Side of Photographic Sheet Films, Z38.1.42-1944

Practice for Temperature of Processing Solutions, Z38.8.1-1944

Sponsor: Optical Society of America

American Standards Withdrawn

Allowable Concentration of Metallic Arsenic and Arsenic Trioxide (American War Standard), Z37.9-1943

Withdrawal of Approval Being Considered

By the Board of Review—

Photographic Filter Terminology and Nomenclature, Z52.61-1945 (American War Standard)

New Project Being Considered

By the Board of Examination—

Standardization of Architectural Drawing

New Project Requested

Standardization of Terminology, Sizes, Measurements and Markings of Baking and Top-of-Range Cooking Utensils (Requested by American Home Economics Association)

New Standard On Graphical Symbols

Sponsors: American Institute of Electrical Engineers; American Society of Mechanical Engineers

Graphical Symbols for Electron Devices, Z32.10-1948, has been reissued to bring it up-to-date with changes in other standards approved by the Graphical Symbols Committee. In general, these changes cover the addition of new x-ray symbols—the expansion of the symbols for shielding and changes and additions to the resonator conventions. The typical application of symbols has also been expanded by a number of new supplementary figures added in order to better explain the use of the component symbols already published. There were also a few editorial changes which were made to clarify the standard.

The standard is being well received by the communications field and it is hoped that the revision will make it even more acceptable to industry.

—W. L. Heard, Chairman.
Sectional Committee Z32.

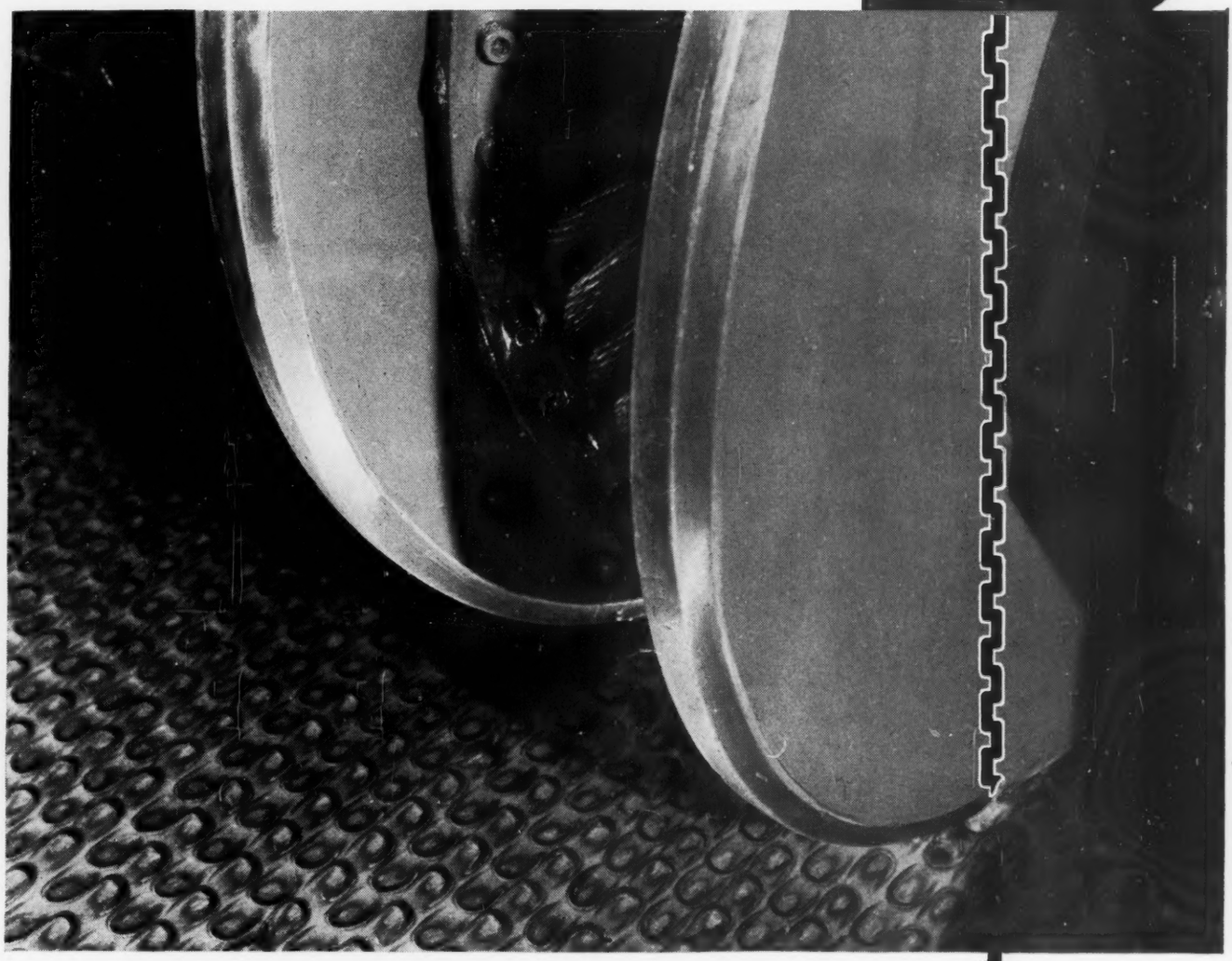
News About Projects

Building Code Requirements for Fire Protection and Fire Resistance, A51—

Sponsors: National Board of Fire Underwriters; National Fire Protection Association; National Bureau of Standards, U. S. Department of Commerce

A series of meetings, attended by more than 60 persons, was held by Committee A51 and its subcommittees in Washington from September 7 through 10. As a result

NEWEST IN "NEEDLES" FOR "STITCHING" STEELS



Pictured above are the "needles" of the latest machine for "stitching" layers of corrosion-resistant alloy steels to a low-cost carbon steel base plate by electric-resistance welding. Developed and built by B&W for exclusive use in its own shops, this machine represents an important advance in the art of seam-welding "clad" steels for fabrication into process equipment for refineries, chemical plants, and paper mills.

Creation of this machine is another example of B&W's continuing search for better tools and better methods to serve industry. Many years of this kind of engineering resourcefulness has linked B&W's name with many significant developments in widely divergent fields. For B&W has never lost the art of having new ideas—a good reason to turn to B&W for help on your present problems or future plans.

N-40

FOR POWER PLANTS — B&W, Open-Pass, Radiant, Integral-Furnace, Cross-Drum, Stirling and Waste-Heat Stationary Boilers . . . Air Heaters . . . Economizers . . . Superheaters . . . Water-Cooled Furnaces . . . Oil, Gas & Multifuel Burners . . . Chain-Grate Stokers . . . Stacks and Breechings . . . Seamless & Welded Tubes for All Pressure and Mechanical Applications . . . Refractories . . . Chemical Recovery Units . . . Alloy Castings.

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of action taken during these meetings, a report showing the committee's present thinking on proposed building code requirements for roofing materials is to be widely circulated. This is the second document the committee has recommended for wide circulation. An earlier report classifying buildings in accordance with the purpose for which they are to be used was issued in August 1947. Both reports are available from the American Standards Association.

Recommendations on proposed requirements for the protection of openings will be circulated soon for consideration by the committee.

Progress was reported in the development of recommendations on classification of buildings according to the relative fire resistance of the materials and methods of construction followed in erecting the building.

Further meetings of Committee A51 and its subcommittees are planned for early in 1949.

Ball and Roller Bearings, B3—

Sponsor: Mechanical Standards Committee

Because of the interest of American industry in the international work on standards for ball and roller bearings, the sectional committee has asked the American Standards Association to arrange for representation on ISO Committee 4 on Ball and Roller Bearings. The secretariat for this international committee is held by the Swedish national standards association.

A proposed draft submitted by Subcommittee 1 covering boundary dimensions, tolerances, and gaging practice has been sent to letter ballot of the sectional committee to determine whether it can now be submitted to the American Standards Association. A new subcommittee has been organized to handle the editing of the proposed standard. Members are T. E. Rounds, Chief Engineer of the Barden Corporation, Danbury, Connecticut, Chairman; H. W. Robb, General Electric Company; and Hudson T. Martin, Standards Engineer of the Fafner Bearing Company.

Transformers, Regulators, and Reactors, C57—

Sponsor: Electrical Standards Committee

A revision of the American Standard for Distribution, Power, and Regulating Transformers, and Reactors Other Than Current-Limiting Reactors, C57.12-1948, has been approved by the sectional committee. This is one of a group of 18 transformer standards approved earlier this year. Because of changes made by the Transformer Committee of the National Electrical Manufacturers Association in the new edition of the NEMA standard for distribution, power, and regulating transformers, the sectional committee placed the American Standard under revision even before the 1948 edition had been published. The other 17 standards in the series are now available in a stiff paper cover with screw fasteners. When approved by ASA, copies of the new edition of C57.12 will be furnished free of charge to all who purchased copies of the complete document.

Errata

Our attention has been called to an error in the American Standard Guide for Loading Oil-Immersed Distribution and Power Transformers, C57.32-1948. The drawings on pages 9 and 10 of this document are transposed. The figure numbers and the explanatory material are on the pages where they belong. Corrected copies of these two pages are being printed and punched so they can be substituted. They may be obtained without charge from the American Standards Association.

Sheets and Sheeting, L4—

Sponsor: American Hospital Association

The long-awaited proposed American Standard Specifications for Sheets and Pillowcases, L4.1, has been submitted tc the American Standards Association for approval and is now out to letter ballot of the Consumer Goods Committee.

These proposed specifications have been the subject of much discussion between sheet manufacturers and the subcommittee that developed them. The proposed compromise standard provides consumers with a set of minimum requirements by which quality can be compared and judged, while in no way handicapping industry in promoting particular brands of sheets. Any manufacturer may, if he chooses, show wherein his product is superior to the minimum set forth.

Specifications and Methods of Test for Safety Glass, Z26—

Sponsors: National Bureau of Standards; Accident Prevention Dept., Association of Casualty and Surety Companies

A revision of Section 1 (Discoloration Test) of the American Standard Safety Code for Safety Glass for Glazing Motor Vehicles Operating on Land Highways, Z26.1-1938, has been approved by the American Standards Association.

A general revision of the entire safety code was undertaken by the sectional committee in April 1946. A subcommittee appointed to draft the revision found, in the course of its work, that controversy existed as to the interpretation of Test 1, pertaining to the discoloration of safety glass, particularly with regard to the light transmission requirement as it applied to heat-absorbing glass used in buses. Because of the urgent need for clarifying this situation, so that restrictions on the licensing of buses might be removed, a temporary revision of Test 1 was prepared for immediate consideration by the sectional committee and approval as American Standard pending completion of the revision of the entire standard.

Graphical Symbols and Abbreviations for Use on Drawings, Z32—

Sponsors: American Institute of Electrical Engineers; American Society of Mechanical Engineers

A compilation which has been made of every suggestion or criticism that has come in since issuance of the American Standard Abbreviations for Use on Drawings, Z32.13—1946 was considered by the subcommittee on abbreviations at its October meeting. This group is trying to harmonize the abbreviations provided for in the Joint Army Navy Standard, JAN STD 12, with the existing American Standard. The members weighed the submittals and determined those which will be included in the revision.

Gaillard Will Hold Seminar January 1949

A PRIVATE five-day seminar on the organization and technique of standardization work, particularly in individual companies, will be held from January 24 through 28, 1949, in Room 503, Engineering Societies Building, 29 West 39 Street, New York City, by Dr John Gaillard, mechanical engineer on the staff of the American Standards Association and lecturer in industrial standardization at Columbia University. The seminar will consist of ten conferences, two being held every day, at 9:30 A.M. and 2:00 P.M. At each conference Dr Gaillard will present a lecture which will be followed by round-table discussion of questions of special interest to those attending.

Previous seminars of this kind held in 1947 and 1948 were attended by representatives of industrial concerns, the Armed Services, a prominent engineering college, and two foreign national standards bodies.

For details concerning registration, write Dr Gaillard at his home address, 400 West 118 Street, New York 27, N. Y., or phone him at Murray Hill 3-3058.

British Locomotive Practice On Limits and Fits

Unless special requests to the contrary are made, all locomotives built in the private locomotive shops in Great Britain henceforth will be constructed to standard limits and fits. This results from the adoption by the British locomotive-building industry, under the guidance of the Locomotive Manufacturers' Association of Great Britain, of a single comprehensive standard works practice in regard to limits and fits.

It is expected that this will provide interchangeability and standardization to such a degree as to simplify considerably the running-shed maintenance replacements, shop overhauls, and the ordering and assembly of spare parts, particularly where a user has locomotives of two or three different makes.

Built up partly on the "hole basis" and partly on the "shaft basis" to meet the special problems of locomotive manufacture, the new standard practice as listed in the LMA book, *Limits and Fits for Locomotive Work*, is grouped under 14 different headings, covering all of the machinery and chassis.